FEBRUARY/FY06

HAWTHORNE ARMY DEPOT
Nevada

Army Defense Environmental Restoration Program Installation Action Plan

FINAL 24 August 2006

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Statement of Purpose

The purpose of the Installation Action Plan (IAP) is to outline the total multi-year Installation Cleanup Program for an installation. The plan identifies environmental cleanup requirements at each site or area of concern, and proposes a comprehensive, installation-wide approach, with associated costs and schedules, to conduct investigations and necessary remedial actions.

In an effort to coordinate planning information between the restoration manager, US Army Environmental Center (USAEC), Hawthorne Army Depot, US Army Materiel Command, Joint Munitions Command, executing agencies, regulatory agencies, and the public, an IAP was completed. The IAP is used to track requirements, schedules and tentative budgets for all major Army installation cleanup programs.

All site-specific funding and schedule information has been prepared according to projected overall Army funding levels and is, therefore, subject to change.

The following agencies contributed to the formulation and completion of this Installation Action Plan at the IAP Workshop held 28 February - 1 March 2006:

Company/Installation/Branch

USAEC

Engineering & Environment, Inc. for USAEC

US Army Corps of Engineers, Sacramento District

Hawthorne Army Depot

Nevada Division of Environmental Protection

Hawthorne Army Depot

HQ Joint Munitions Command

Engineering & Environment, Inc. for USAEC

USAEC

Acronyms & Abbreviations

ACSIM	Assistant Chief of Staff for Installation Management
AEDB-R	Army Environmental Data Base - Restoration
AGPR	Airborne Ground Penetrating Radar
ARRCOM	US Armament Material Readiness Command
ASROCS	Anti-Submarine Rockets
AST	Aboveground Storage Tank
CAP	Corrective Action Plan
CERCLA	Comprehensive Environmental Response Compensation and Liability Act (1980)
CMI(C)	Corrective Measures Implementation (Construction)
CMI(O)	Corrective Measures Implementation (Operation)
CMS	Corrective Measures Study
COC	Contaminants of Concern
CPT	Cone Penetrometer Test
CRP	Community Relations Plan
CS	Confirmation Study
CTC	Cost-to-Complete
cy	cubic yards
DA	Department of Army
DD	Decision Document
DDT	Ichloro Iphebyl Richloroethane
DERP	Defense Environmental Restoration Program
DES	Remedial Design
DF-2	Diesel Fuel #2
DNT	Dinitrotoluene
DoD	Department of Defense
DSERTS	Defense Site Environmental Restoration Tracking System (now AEDB-R)
DU	Depleted Uranium
DZB	Day, Zimmermann/Basil Corporation
DZHC	Day & Zimmermann Hawthorne Corporation
EDB	1,2-Dibromoethane
EOD	Explosive Ordnance Disposal
ER,A	Environmental Restoration, Army
FFA	Federal Facility Agreement
FFSRA	Federal Facility Site Remediation Agreement
FS	Feasibility Study
ft	feet
FUDS	Formerly Used Defense Sites
FY	Fiscal Year
gal	gallon
gpd	gallons per day
GOCO	Government-owned, Contractor-operated
gpm	gallons per minute
GPR	Ground Penetrating Radar
GPS	Global Positioning System
GW	Groundwater

HMX	Her Majesty's Explosives
HQ	Headquarters
HWAAP	Hawthorne Army Depot AEDB-R Identification
HWAD	Hawthorne Army Depot
HRR	Historical Records Review
HRS	Hazard Ranking System
IAP	Installation Action Plan
IC	Institutional Controls
IMP(C)	Implementation (Construction)
IMP(O)	Implementation (Operation)
INS CMR	Installation Commander
INV	Investigation
IRA	Interim Remedial Action
IROD	Interim Record of Decision
IRP	Installation Restoration Program
ISC	Initial Site Characterization
IT	International Technology Corporation
IWTP	Industrial Wastewater Treatment Plant
JMC	Joint Munitions Command
K	1,000
kg	kilograms
LPH	Liquid Phase Hydrocarbons
LTM	Long-term Management
LUST	Leaking Underground Storage Tank
MCL	Maximum Contaminant Level
MEC	Munitions Explosive Constituents
mg	milligrams
MMRP	Military Munitions Response Program
MNA	Monitored Natural Attenuation
MW	Monitoring Well
NDEP	Nevada Division of Environmental Protection
NE	Not Evaluated
NFA	No Further Action
NIOTC	Naval Inshore Operations and Training Center
NPDES	National Pollutant Discharge Elimination System
NOV	Notice of Violation
NPL	National Priorities List
NV	Nevada
OB/OD	Open-burning/Open-detonation
OP	Operation Procedures
OU	Operable Unit
O&M	Operation & Maintenance
PAH	Polycyclic Aromatic Hydrocarbons
PA	Preliminary Assessment
PCB	Polychlorinated Biphenyl
PEP	Pyrotechnics, Explosives and Propellants

Acronyms & Abbreviations

PHC	Petroleum Hydrocarbons
PMCDIR	Project Manager for Chemical Demilitarization and Installation Restoration
POL	Petroleum, Oil & Lubricants
POM	Program Objective Memorandum (budget)
PP	Proposed Plan
PRG	Preliminary Remediation Goals
PY	prior year
RA	Remedial Action
RA(C)	Remedial Action (Construction)
RA(O)	Remedial Action (Operation)
RAB	Restoration Advisory Board
RAC	Risk Assessment Code
RACER	Remedial Action and Cost Engineering Requirements
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RDX	1,3,5-Trinitro-1,3,5-Triazacychlohexane
REM	Removal
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
RIP	Remedy-in-Place
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
SARA	Superfund Amendments and Reauthorization Act
SCR	Site Characterization Report
SI	Site Inspection
SVOC	Semi-Volatile Organic Compounds
SWMU	Solid Waste Management Unit
TAPP	Technical Assistance for Public Participation
TCE	Trichloroethylene
TNB	1,3,5-trinitrobenzene
TNT	2,4,6-Trinitrotoluene
TPH	Total Petroleum Hydrocarbons
TPH-D	Total Petroleum Hydrocarbons-Diesel
TPH-G	Total Petroleum Hydrocarbons-Gasoline
ug/l	microgram per liter
USACE	US Army Corps of Engineers
USACHPPM	US Army Center for Health Promotion and Preventive Medicine (formerly USAEHA)
USAEC	US Army Environmental Center
USAEHA	US Army Environmental Hygiene Agency (now USACHPPM)
USATHAMA	US Army Toxic and Hazardous Material Agency (now USAEC)
USEPA	US Environmental Protection Agency
USGS	US Geological Survey
UST	Underground Storage Tank

UXO	Unexploded Ordnance
VOC	Volatile Organic Compounds
yr	year

Installation Information

Installation Locale: HWAD is located in Mineral County, Nevada, approximately 135 miles southeast of Reno, NV. The depot covers an area of approximately 150,000 acres and encloses three sides of the town of Hawthorne which has a population of approximately 4,500 people. HWAD is bounded on three sides by mountains; the Wassuk Mountain Range on the west, the Gillis Range on the east, and the Excelsior Mountains on the south. Walker Lake bounds the depot on the north.

Installation Mission: The current mission of HWAD is to receive issue, store, renovate, inspect, demil, and dispose of conventional ammunition.

Lead Organization:
Army Materiel Command

Lead Executing Agencies:
Investigation and Remedial Action Phase: USACE, Sacramento District

Regulatory Participation
State: Nevada Division of Environmental Protection (NDEP)

NPL Status:
Non-NPL/RCRA Permit

RAB Status: No existing RAB. Public will be solicited for interest in August 2006.

Program Summaries
IRP
Contaminants of Concern: Amatol, Ammonium Picrate, DDT, Explosives, Metals, Nitrates, PCBs, Petroleum Hydrocarbons, RDX, TCE, TNT, TPH, UXO
Media of Concern: Soil, Groundwater
Estimated date for RIP/RC: 2007/2027
Funding to Date (through FY05): $38,638K
Current Year Funding (FY06): $3,996K
Cost-to-Complete (FY07+): $3,126K

MMRP:
Contaminants of Concern: Metals, Explosives Residuals, MEC
Media of Concern: Soil, Groundwater, Surface Water, Sediments
Estimated date for RIP/RC: 2017/2032
Funding to Date (through FY05): $0K
Current Year Funding (FY06): $397K
Cost-to-Complete (FY07+): $285,408K

Historic Activity

The installation was originally constructed in 1928 as a US Naval Ammunition Depot. The early mission of the depot was to store, service, and issue ammunition to the Pacific Area. Following World War II, the Depot was actively involved in the demolition of various types of allied and enemy ammunition. The role of the Depot was also expanded to include receiving, renovating, loading, maintaining, storing, and issuing ammunition, explosives, expendable ordnance items, and/or weapons and technical ordnance materials. The Depot was also used to test weapons and dispose of unserviceable and/or dangerous ammunition and explosives. In 1977, the Depot was transferred to the US Army and renamed Hawthorne Army Ammunition Plant (HWAAP). After the transfer, HWAAP was re-designated as a Government Owned/Contractor Operated (GO/CO) plant in 1980 and operating under the direction of the former Day and Zimmermann/Basil Corporation (DZB). Its mission in 1980 -- 1994 was to:

(1) receive, produce, assemble, load, issue, store, renovate, inspect, test demilitarize, and dispose of conventional ammunition;

(2) operate and/or maintain in operational readiness cast and fuel-air explosive loading plants, rocket assemble plants, and medium/major caliber assembly lines;

(3) provide special/experimental high explosive casting, extruding, and pressing; fuel air explosive loading and support services to designated research and development activities;

(4) provide storage facilities for war reserve ammunition, and maintain designated ammunition in a state of readiness for mobilization, including assembling or otherwise providing base unit materials; and

(5) conduct testing of solid propelled munitions, high explosive warheads, mechanical and electronic fuses, cartridge cases, primers, rocket motors, and other ballistic devices.

HWAAP was redesignated as HWAD and its mission was revised on 1 October 1994. HWAD has continued to fulfill its revised mission (shipping, storage and recycling of munitions) and operating under the direction of Day & Zimmermann Hawthorne Corporation (DZHC).

Hawthorne Army Depot (HWAD) is currently a government-owned/contractor-operated (GO/CO) facility. Day & Zimmermann Hawthorne Corporation (DZHC) (former Day and Zimmermann/Basil Corporation (DZB)) is the current operating contractor. The government and DZHC employ approximately 500 personnel.

HWAD is not on the National Priority List (NPL). Studies and investigations have been conducted under the guidance of State of Nevada Division of Environmental Protection (NDEP). Releases of hazardous substances, pollutants, or contaminants have been located within the meaning of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA) and applicable Nevada state law. The regulatory process for the Installation Restoration Program is governed under RCRA.

Cleanup Program Summary

IRP

- Prior Year Progress: Restoration was completed at B29. Progress continues on B04, B24 and I09. Base-wide groundwater monitoring will continue.
- Future Plan of Action: PBC procurement in FY06.

MMRP

- Prior Year Progress: The Range Inventory was completed in May 2003. The SI was initiated in July 2005.
- Future Plan of Action: Site Investigations are scheduled for completion in September 2006.

HAWTHORNE ARMY DEPOT

Installation Restoration Program

IRP Summary

Total AEDB-R IRP Sites/AEDB-R Sites with Response Complete: 129/87

Different Site Types:

1 Above Ground Storage Tank	1 Explosive Ordnance Disposal Area
7 Burn Areas	4 Contaminated Fill
1 Contaminated Ground Water	1 Contaminated Soil Piles
3 Disposal Pit/Dry Wells	1 Fire/Crash Training Area
1 Firing Range	1 Incinerator
1 Plating Shop	5 Spill Site Areas
5 Storage Areas	4 Surface Disposal Areas
42 Surface Impoundment/Lagoons	2 Underground Storage Tanks
1 Unexploded Munitions/Ordnance	4 Waste Treatment Plants
42 Landfills	2 Other

Contaminants of Concern: Amatol, Ammonium Picrate, DDT, Explosives, Metals, Nitrates, PCBs, Petroleum Hydrocarbons, RDX, TCE, TNT, TPH, UXO

Media of Concern: Soil, Groundwater

Completed REM/IRA/RA:

A04, A11, B06-B14, B16, B-17A, B18, B19, B22A, B22B, B23, B27B, B27C, B29, B30, B31, C01A/B, H01, I07, I08, J14, J28, K10

Total IRP Funding

Prior Years (up thru FY05):	$38,638K
Current Year Funding (FY06):	$ 3,996K
Future Requirements (FY07+):	$ 3,126K
TOTAL:	$45,760K

Duration of IRP

Year of IRP Inception: 1993
Year of RIP/RC Completion: 2007/2027
Year of IRP Completion (including LTM): 2036

IRP Contamination Assessment Overview

Site investigations and groundwater monitoring have been conducted by the Army, US Army Environmental Hygiene Agency (USAEHA --now USACHPPM), US Army Toxic and Hazardous Materials Agency (USATHAMA -- now USAEC), and US Geological Survey (USGS), Corps of Engineers, and numerous contractors in various areas throughout the installation since 1974. The primary contaminants of concern are explosives (2,4,6-trinitrotoluene (TNT), trichloroethylene (TCE), 1,3,5-trinitro-1,3,5-triazacychlohexane (RDX), nitrate/nitrite) and unexploded ordnance (UXO).

Prior to the transfer of HWAAP to the Department of Army, USGS conducted a study in three phases under the direction of Department of Navy to assess the possibility of groundwater contamination in the vicinity of the disposal pits at facilities 103-41 (HWAAP-B29), 103-16 (HWAAP-B27A). The disposal pits were constructed to receive explosive waste from the demilitarization operation. The explosive waste included composition D (ammonium picrate), amatol (TNT plus ammonium nitrate) and RDX.

In Phase I and III, November 1974 - November 1977, USGS installed a total of 26 exploratory wells in the immediate proximity and northwest of the disposal area adjacent to demilitarization facility 103-41 (HWAAP-B29). Analysis of water samples taken from the wells showed levels of nitrate/nitrite above background and several of the wells were found to contain TNT. The highest concentration of TNT (300 ppb and 430 ppb) was detected in two separate determinations in one of the wells. The compound dinitrotoluene (DNT) was also detected from one of the wells. Study indicated that a narrow plume of TNT contamination existed in a northwesterly direction

In Phase II, June 1976 - November 1977, USGS installed eight exploratory wells in the vicinity of disposal pits adjacent to the demilitarization facility 103-16 (HWAAP-B27A). Chemical analysis of the groundwater samples revealed nitrate/nitrite levels to be above background, in most cases and one sample from one of the wells showed TNT at a trace level. Based on further analysis during the investigation phase, chemical analyses have not reached action levels for groundwater.

After the transfer of HWAAP in 1977 to the Department of Army, US Army Armament Material Readiness Command (ARRCOM) requested USATHAMA, then known as Project Manager for Chemical Demilitarization and Installation Restoration (PMCDIR), to conduct assessments of HWAAP to determine if there was any contamination resulting from past waste disposal practices.

Installation assessment was conducted between 1977 and 1981 by USATHAMA. Over 25 pits were identified to have received explosive wastes from loading and demilitarization operations in the production areas: 101, 102, 103, 104/49, and 108. The assessment concluded that TNT had migrated in a narrow plume to a distance of between 1,200 and 3,200 feet down gradient from 103-41 disposal pits. The migration rate of TNT was slower than the groundwater rate. The assessment also concluded that nitrogen compounds,

primarily nitrate, were migrating in two plumes toward Walker Lake. A study was performed by US Army Environmental Hygiene Agency, 1-5 May 1995 showing no impact from HWAD operations to Walker Lake.

A disposal area for mustard and phosgene chemical munitions (HWAAP-A05) was located during the assessment. The area was first used during World War II; it was last used in 1946 to decontaminate and bury an unspecified quantity of mustard munitions and their toxic agent contents. In 1991, an attempt was made to locate the munitions and to determine if any mustard agent remained either in the soil or in the munitions. Several pits were located and excavated. M-15 chemical detectors gave positive readings for mustard in only one munition; however, laboratory analyses of samples taken from the munitions were negative. Testing for mustard vapors from the pits was negative. Since the total pit was not excavated, the area could still have chemical agent munitions buried at the site.

Several test ranges were also identified in the assessment. Of particular concern is the range near Walker Lake where extensive munitions testing was conducted from World War II to the early seventies. Most of the rounds impacted in the lake and many remain there as UXO. Live rounds are frequently found on the receding shoreline of Walker Lake. Another area of concern is the Naval Inshore Operation Training Center and Firing Range. It was documented by Explosive Ordnance Division (EOD) personnel to be one of the most heavily UXO contaminated areas at HWAD.

The Rocket Test Area located near the southern boundary of HWAD also contains UXO in the impact area. Adjacent to the Rocket Test Area is also a site that was used for fuse and ordnance disposal from World War II through the Korean War. It was reported in the historical archive from this era concerning past operations at HWAD that demolition charges used to destroy the munitions were so large that live munitions were found as far as one mile from the detonation pit. The area is considered extremely hazardous and is fenced to discourage trespassing.

An evaluation of Solid Waste Management Units (SWMUs) was performed by USAEHA between May 1987 and August 1988. At that time 82 SWMUs were identified. Site screening inspections were conducted from July through December 1992, to verify the SWMUs, and data were gathered for the USEPA to revise the Hazard Ranking System (HRS). As a result of the site screening inspections, a total of 123 SWMUs were identified.

Under the Installation Restoration Program - Defense Environmental Restoration Account, remedial investigation were conducted of Group A Solid Waste Management Units (33 SWMUs) beginning in 1993, and Group B (55 SWMUs), Old Bomb Disposal Sites (12 SWMUs (UXO and explosive disposal and burned sites), 7 Underground Storage Tank sites, and 1 Above Ground Storage Tank site beginning in 1994.

Group A SWMUs consist of 29 catchment pits/ponds/impoundments sites, 2 disposal pit sites, 1 disposal pile site and 1 landfill. Work performed includes surface geophysics survey, near surface soil and subsurface soil sampling and analyses, and groundwater sampling at 3 existing wells. Baseline risk assessments for the 29 sites were completed

November 1997. Groundwater sampling is included in the long-term groundwater monitoring plan.

Group B SWMUs consist of 23 landfills, 15 catchment/pits/impoundments, 2 Deactivation Furnace areas, 7 disposal pits/ditches/trenches, 2 OB pits, 5 discharge/spill areas, and 1 mustard gas disposal area. Work performed included aerial photography, GPS surveying, Airborne Geophysics Survey, Surface Geophysics Survey, Subsurface Screening for Utilities and UXOs, Soil Gas Survey, Soil Sampling and analyses, Groundwater Measurements. Groundwater sampling at some of these sites (B04, I07, I15, B05, B06, J05, A11, A05, J08, J09, J06, J10, I06, J21, J22, J07, J24, J11/15, J14, B25, C01a/b, J16, J02, I02, J17, I05, I03/04, K18, I11, I17, B28a, B28b, B28c, B28d, I09/10, J23, I08, B27b, B27c, I13, I14, J27, J26, A08, J12, J28, J29, J04, J25, J13, and A03) is part of the groundwater monitoring program. Baseline Risk Assessments for most of the sites were included in the RI/FS.

A pilot study for Windrow composting was performed during the summer of 1997. In this study, 2,500 cubic yards of soil containing TNT, HMX and DNT was treated at SWMUs B20, B32 and I15. Remediation was completed at these sites and they are currently going through the closure process. As part of the pilot study, regulatory requirements for the process as well as operating conditions were established for the site. The involved regulatory agencies determined that the remediation process would not require a containment building or a solid surface pad. In addition, using treated wooden ammunition boxes as a wood source was deemed acceptable. The original study was expanded to include 300 cubic yards of ammonium picrate contaminated soil. Results indicate that this treatment process will successfully remediate soil contaminated with ammonium picrate for which, prior to this test, there was no accepted treatment methodology.

Old Bomb Disposal Sites consists of 6 landfills, 4 open burn burial pit sites and 2 popping furnace sites. These sites were used for disposal of ordnance. An airborne ground penetration radar (AGPR) survey was conducted to evaluate these sites. As a result of the survey and previous geophysical surveys, test pits are proposed to characterize geophysical anomalies, soil samplings are proposed to determine if release of hazardous constituents has occurred. Cleanup will be completed under the MMRP.

Seven UST sites are located at Bldg 13, 103-6, 101-25, 94, Camp Jumbo, Bldg 106-10, and 20-21. Tanks were removed between 1991 and 1993. Sampling results showed evidence of elevated levels of total petroleum hydrocarbons (TPH) in soil ranging from about 6,000 mg/kg to 73,000 mg/kg at depth ranging from 5 to 19 feet. For three sites (Camp Jumbo, Building 106-10 and Building 20-21) decision document for no further action was approved and signed by the regulatory agency 10/3/96. Three bioventing systems at Bldg 13, 101-25 and 103-6 will be monitored under a contract managed under the PBC.

Above Ground Storage Tank (AST) Site, HWAAP-J03 (Bldg 70 Diesel Leak) consists of two 100,000 gallon ASTs that were installed in the 1940s and were leaking diesel fuel over a period of time. In 1991, the contaminated soils were removed by HWAD creating a large

excavation pit. Remedial investigation conducted in 1994 indicated that soil contamination of TPH was at an elevated level of over 40,000 mg/kg in the excavation pit, and TPH groundwater was at 11 mg/l. The two AST tanks were removed in February 1997. A bioventing pilot study was completed at this site. Stockpiled soils contaminated with petroleum hydrocarbons from twelve sites were collected at HWAAP-J03. This soil was used to fill the excavation pit. The enhanced bioventing test results indicate that bioventing may be able to remediate the site within eight years. This system will be monitored under the PBC. Windrow composting of sites within the 101 production area is complete. Site HWAAP-B04, located in the 101 Area is scheduled for remediation by windrow composting. Composting is performed outdoors, on a specifically prepared soil pad.

This IAP includes only the IRP eligible sites and those listed in the AEDB-R database.

In August 2001, the HWAD conducted a 5 year review of the January 1996 soil action levels. Based on this review and the review of the NDEP soil action levels, it was determined to adopt NDEP standards for 1,1,1-trichloroethane, 1,2,3-trichloropropane, 1,2-dibromoethane (EDB), 1,2-dichlorobenzene, 1,3,5-trinitrobenzene, 1,3-dinitrobenzene, 1,4-dichlorobenzene, 2,3,7,8-TCDD, 2,4,6-trinitrotoluene, 2,4-dinitrotoluene, 2,6-dinitrotoluene, m-nitrotoluene, o-nitrotoluene, p-nitrotoluene, acetone, aluminum, ammonium picrate, aroclor-1016, aroclor-1221, aroclor-1232, aroclor-1248, aroclor-1254 aroclor-1260, arsenic, barium, benzene, beryllium, bis(2-chloroisopropyl)-ether, bis(2-ethylhexyl)-phthalate, bromoform, bromomethane, butyl benzyl phthalate, cadmium, carbon tetrachloride, chlorobenzene, chloroform, chloromethane, chromium, dibromochloromethane, dibutyl-phthalate, dichlorodifluoromethane, diethyl phthalate, ethylbenzene, HMX, lead, mercury, methylene chloride, nitrobenzene, phenol, RDX, selenium, silver, tetrachloroethene, toluene, xylenes, trichlorofluoromethane and vinyl chloride derived from USEPA Region IX Preliminary Remediation Goals (PRGs).

IRP Cleanup Exit Strategy

A PBC will be awarded in summer FY06 to bring sites B04, B20, B24, B27A, K03, K05, J03, I09, B24A, and B26 to response complete. LTM will be performed at sites where necessary.

Previous Studies

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- Hazardous Waste Technical Consultation No. 38-26-0225-82, Waiver of Ground-water Monitoring Requirements, HWAAP, Hawthorne, NV, 21-24 Jun 1982
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1983

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- Draft - Letter Report for Groundwater Wells Installation & Sampling, Forsgren, 11/01/02

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- Final - Sampling & Analysis Report for Groundwater Wells Installation & Sampling Bldg 13, B04, B20 * I09/I10, Forsgren, 02/28/03
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- Draft – Workplan Monitoring Well Installation Development & Sampling at Bldg 336 Site, Burleson, Sep-03
- Final - Remedial Investigation Report Addendum A SWMU Bldg 101-44 Landfill, Chung & Assoc, 09/01/03
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- Draft – Workplan Groundwater Monitoring & Product Recovery for Bldg 336, SECOR, Oct-03
- Draft Final Workplan Monitoring Well Installation Development & Sampling Bldg 336, Burleson, Oct-03
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- Draft Groundwater Monitoring & Product Recovery Bldg 336, SECOR, Nov-03
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- Draft Rpt Groundwater Monitoring & Remediation Rpt for Bldg 336, SECOR, Dec-03
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- Draft - Remediation Report Explosive Soil Remediation SWMU I07 Bldg 101-44 Landfill, Chung & Assoc, 12/01/03

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- Draft - Remedial Report SWMU B29 Ponds E, F, & K-L, Chung & Assoc, 01/01/04
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- Final Rpt July/04 Groundwater Monitoring & Product Recovery Bldg 336, SECOR, Aug-04
- Draft Rpt Aug/04 Groundwater Monitoring & Product Recovery Bldg 336, SECOR, Sep-04
- Draft Rpt Groundwater Monitoring & Product Recovery Bldg 336, SECOR, Sep-04
- Final Rpt Groundwater Monitoring & Product Recovery Bldg 336, SECOR, Sep-04
- Final Rpt Groundwater Monitoring & Product Recovery Bldg 336, SECOR, Oct-04
- Draft - Report Monitoring Well IRPMW08 Replacement, Secor, 09/01/04
- Draft - Workplan Closure Analysis at SWMU J03, Secor, 10/01/04
- Draft - Workplan HWAAP K10 - Buried Paint Remediation, Secor, 10/01/04
- Draft - Workplan SWMU B20 SVE Well Abandonment, Secor, 11/01/04
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- Final - Monitoring Well IRPMW08 Abandonment Monitoring Well IRPMW08A Installation w/CD, Secor, 01/01/05
- Final - Workplan HWAAP-K10 Buried Paint Remediation, Secor, 01/01/05
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HAWTHORNE ARMY DEPOT

Installation Restoration Program
Site Descriptions

PBC@HAWTHORNE PBC

SITE DESCRIPTION

This site serves as a place holder for the PBC. It includes sites B04, B20, B24, B27A, K03, K05, J03, I09, B24A, B26, and the base-wide groundwater monitoring program.

A PBC was awarded in July 2006 to address all IRP-related sites through RIP/RC.

CLEANUP STRATEGY

LTM will be performed at sites after RIP/RC -- where necessary.

.

STATUS

REGULATORY DRIVER: RCRA, Subtitle C: Hazardous Wastes

RRSE: NE

CONTAMINANTS OF CONCERN: Explosives, VOCs, Petroleum Hydrocarbons

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
RFA	200209	200309
RFI/CMS	200310	200403
DES	200404	200409
CMI(C)	200601	200806
CMI(O)	200606	201009
LTM	201010	203509

RIP: 200809
RC: 201009

HWAAP-A06B

OLD BOMB DISPOSAL AREA 2 (SWMU) (PAGE 1 OF 2)

SITE DESCRIPTION

This landfill area covers about 2 acres and is located one mile southwest of Rocket Mountain. Operations began in 1944, and disposal activities ceased prior to 1986. Disposal of ordnance and hundreds of drums of unknown material occurred in the landfill.

A 1987 USAEHA report indicated that the disposed waste included ammunition-related explosives chemicals were placed in disposal pits and UXO. A 1989 investigation conducted by International Technology Corporation (IT) included geophysical surveying, five test pits, and soil sampling. Elevated levels of various explosives and metals were found in soil, along with geophysical anomalies. In 1994, an airborne ground penetrating radar (AGPR) surveying was completed. The entire site was surveyed with multiple waste units identified in the western and northwestern trenches. In 1994, an Army evaluation team visited the site to determine if the UXO at the site posed an imminent hazard. As a result of the evaluation, an imminent threat to human safety was determined to exist.

STATUS

REGULATORY DRIVER: RCRA, Subtitle C: Hazardous Wastes

RRSE: High

CONTAMINANTS: Explosives, UXO, Metals

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
RFA	198705	198808
CS	198705	199310
RFI/CMS	199510	199709
LTM	200109	203609

RC: 200108

All ranges, which include some disposal areas at HWAD, were originally included in the IRP, but no progress on restoration could be made because these sites are not eligible for ER,A funding. These sites have now undergone review under the US Army Active/Inactive Range Inventory. Under the Phase II Range Inventory, ranges associated with Old Bomb, Walker Lake Test Range and the NIOTC Range have been determined to be active ranges. This site falls within the active range.

Groundwater monitoring began in 1989. IRP groundwater monitoring began in 1997. The state has indicated that further remedial action beyond groundwater monitoring is suspended pending change in site usage (range closure), or groundwater contaminant identification. Over the years, the monitoring frequency has been reduced and the analyte suite has been refined. No detects have ever been found.

Corrective action is required by RCRA permit. NDEP considers this site an uncharacterized site that will be addressed by the US Army when the active range is closed/transferred/transferring. Corrective action requirements at this site will be assessed in five year reviews (next review in FY08 based on groundwater results and change in range status.

CLEANUP STRATEGY

Monitoring for explosives in groundwater will continue in accordance with the approved base-wide groundwater monitoring plan until range closure. Three wells cover eleven Old Bomb sites -- HWAAP-A06B, A06C, A06D, A06E, C04, C05, G01B, G01C, I22, I23 and K07.

HWAAP-A06C
OLD BOMB DISPOSAL AREA 3 (PAGE 1 OF 2)

SITE DESCRIPTION

This site is a landfill that measures 500' x 100' and is located one mile south of Rocket Mountain. Operations began in 1944; it is not known when operations ceased. A 1987 USAEHA report indicates that disposal of many drums and ordnance items occurred in this landfill.

A 1989 investigation included geophysical surveying, excavation of one test pit and soil sampling. Elevated levels of metals in soil, as well as the presence of geophysical anomalies, were found. In 1994, an AGPR survey was completed, and an Army evaluation team visited the site and determined that UXO poses an imminent hazard.

STATUS

REGULATORY DRIVER: RCRA, Subtitle C: Hazardous Wastes

RRSE: Medium

CONTAMINANTS: Explosives, UXO (possible DU), Metals

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
RFA	198705	198808
CS	198705	198808
RFI/CMS	199510	199709
LTM	200109	202609

RC: 200108

It was reported during 1990 that 150 - 350 25mm DU rounds had previously been fired at this site. A preliminary site inspection did not reveal the impact location of the projectiles. All ranges, which include some disposal areas at HWAD, were originally included in the IRP, but no progress on restoration could be made because these sites are not eligible for ER,A funding. These sites have now undergone review under the US Army Active/Inactive Range Inventory. Under the Phase II Range Inventory, ranges associated with Old Bomb, Walker Lake Test Range and the NIOTC Range have been determined to be active ranges. This site falls within the active range.

Groundwater monitoring began in 1989. IRP groundwater monitoring began in 1997. The state has indicated that further remedial action beyond groundwater monitoring is suspended pending change in site usage (range closure), or groundwater contaminant identification. Over the years, the monitoring frequency has been reduced and the analyte suite has been refined. No detects have ever been found.

Corrective action is required by RCRA permit. NDEP considers this site an uncharacterized site that will be addressed by the US Army when the active range is closed/transferred/transferring. Corrective action requirements at this site will be assessed in five year reviews (next review in FY08) based on groundwater results and change in range status.

HWAAP-A06C
OLD BOMB DISPOSAL AREA 3
(PAGE 2 OF 2)

CLEANUP STRATEGY

Monitoring for explosives in groundwater will continue in accordance with the approved base-wide groundwater monitoring plan until range closure. Three wells cover eleven Old Bomb sites -- HWAAP-A06B, A06C, A06D, A06E, C04, C05, G01B, G01C, I22, I23 and K07.

HWAAP-A06D
OLD BOMB DISPOSAL AREA 4 (PAGE 1 OF 2)

SITE DESCRIPTION

This landfill and waste treatment site is located one half mile southeast of Rocket Mountain and covers about 300 square feet with two partially filled trenches flanking the east and west sides. Operations began in 1944; it is not known when operations ceased. A 1987 USAEHA report indicated that disposal of wastewater containing explosives occurred in addition to disposal and burning of PEP (pyrotechnic, explosives and propellants) and ordnance. Explosives-staining in trenches was also observed.

A 1989 investigation conducted by International Technology Corporation (IT) included geophysical surveying, excavation of seven test pits, and soil sampling. Elevated levels of explosives (TNT 130,000 mg/kg), metals, and ammonium picrate (3,300 mg/kg) in soil, along with geophysical anomalies, were found. In 1994, an AGPR survey was completed over the entire site at several target locations. An Army evaluation team visited the site, and determined that UXO poses an imminent hazard.

STATUS

REGULATORY DRIVER: RCRA, Subtitle C: Hazardous Wastes

RRSE: High

CONTAMINANTS: Explosives, UXO, Metals

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
RFA	198705	198808
CS	198705	199410
RFI/CMS	199510	199709
LTM	200109	203609

RC: 200108

All ranges, which include some disposal areas at HWAD, were originally included in the IRP, but no progress on restoration could be made because these sites are not eligible for ER,A funding. These sites have now undergone review under the US Army Active/Inactive Range Inventory. Under the Phase II Range Inventory, ranges associated with Old Bomb, Walker Lake Test Range and the NIOTC Range have been determined to be active ranges. This site falls within the active range.

Groundwater monitoring began in 1989. IRP groundwater monitoring began in 1997. The state has indicated that further remedial action beyond groundwater monitoring is suspended pending change in site usage (range closure), or groundwater contaminant identification. Over the years, the monitoring frequency has been reduced and the analyte suite has been refined. No detects have ever been found.

Corrective action is required by RCRA permit. NDEP considers this site an uncharacterized site that will be addressed by the US Army when the active range is closed/transferred/transferring. Corrective action requirements at this site will be assessed in five year reviews (next review in FY08) based on groundwater results and change in range status.

HWAAP-A06D
OLD BOMB DISPOSAL AREA 4
(PAGE 2 OF 2)

CLEANUP STRATEGY

Monitoring for explosives in groundwater will continue in accordance with the approved base-wide groundwater monitoring plan until range closure. Three wells cover eleven Old Bomb sites -- HWAAP-A06B, A06C, A06D, A06E, C04, C05, G01B, G01C, I22, I23 and K07.

HWAAP-A06E
OLD BOMB DISPOSAL AREA 5 (PAGE 1 OF 2)

SITE DESCRIPTION

This waste pile and treatment site measures about 850' x 100' and is located immediately east of Old Bomb Disposal Area No. 4. Three 150'x 30'x 20' trenches are located in the center of this site. Operations began in 1940; it is not known when operations ceased. A 1987 USAEHA report indicated that many tons of ordnance were burned and/or buried at this site. Explosive staining and exposed ordnance were observed.

A 1989 investigation included geophysical surveying, four test pits, and soil sampling. Elevated levels of metals in soil, as well as geophysical anomalies, were found. In 1994, an AGPR survey was completed over the entire site at several targets. An Army evaluation team visited the site, and determined that UXO at the site poses an imminent hazard.

STATUS

REGULATORY DRIVER: RCRA, Subtitle C: Hazardous Wastes

RRSE: High

CONTAMINANTS: Explosives, UXO, Metals

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
RFA	198705	198808
CS	198705	198808
RFI/CMS	199510	199709
LTM	200109	203609

RC: 200108

All ranges, which include some disposal areas at HWAD, were originally included in the IRP, but no progress on restoration could be made because these sites are not eligible for ER,A funding. These sites have now undergone review under the US Army Active/Inactive Range Inventory. Under the Phase II Range Inventory, ranges associated with Old Bomb, Walker Lake Test Range and the NIOTC Range have been determined to be active ranges. This site falls within the active range.

Groundwater monitoring began in 1989. IRP groundwater monitoring began in 1997. The state has indicated that further remedial action beyond groundwater monitoring is suspended pending change in site usage (range closure), or groundwater contaminant identification. Over the years, the monitoring frequency has been reduced and the analyte suite has been refined. No detects have ever been found.

Corrective action is required by RCRA permit. NDEP considers this site an uncharacterized site that will be addressed by the US Army when the active range is closed/transferred/transferring. Corrective action requirements at this site will be assessed in five year reviews (next review in FY08) based on groundwater results and change in range status.

HWAAP-A06E
OLD BOMB DISPOSAL AREA 5

CLEANUP STRATEGY

Monitoring for explosives in groundwater will continue in accordance with the approved base-wide groundwater monitoring plan until range closure. Three wells cover eleven Old Bomb sites -- HWAAP-A06B, A06C, A06D, A06E, C04, C05, G01B, G01C, I22, I23 and K07.

HWAAP-B04
101-44 IMPOUNDMENT (PAGE 1 OF 2)

SITE DESCRIPTION

HWAAP-B04 is a double-lined surface impoundment approximately 140'x 240'x15', with a capacity of 586,000 gallons designed to collect explosive-contaminated wash-down water from demilitarization operations. The impoundment was never used, but was constructed using soil from a previous unlined impoundment that had collected explosive wash-down water from 1944 to 1977. The newer lined impoundment was constructed at the same location as the older unlined impoundment.

A 1989 RI included collecting near surface, subsurface and groundwater samples from within and adjacent to the impoundment. Explosives were detected in the soil samples and explosives were detected in the groundwater at levels up to 30 mg/L above the regulatory standards.

STATUS

REGULATORY DRIVER: RCRA, Subtitle C: Hazardous Wastes

RRSE: Medium

CONTAMINANTS: Explosives, VOCs

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
RFA	198705	198808
CS	198705	198808
RFI/CMS	199405	199506
DES	199803	199901
IRA	200106	200109
CMI(C)	199707	200909

RC: 200909

Additional RI work in 1994 included 4 surface samples collected from within the impoundment where visual staining of explosives was observed, and groundwater samples from existing wells. Elevated concentrations of explosives (240 mg/kg of RDX, and 22 mg/kg of 1,3,5-trinitrobenzene) were detected in these soil samples. Groundwater samples detected high level of explosives (2,600 µg/L of RDX, 3.6 µg/L of 1,3,5-TNB, 18 µg/L of 4-Amino-DNT, 40 µg/L of ammonium picrate). TCE is also a COC at this site. Sixty-eight feet of cone penetrometer test (CPT) sounding was conducted at 2 locations to assess the optimal depths to collect subsurface soil samples. Explosive contamination exceeds NDEP action levels. Annual groundwater monitoring began in 1997.

In 1999, 6,171 cy of contaminated soil was bioremediated by the operating contractor of Hawthorne. One production well was installed in FY04. Water from this well will be used to facilitate the bioremediation. In 2005, 3,100 cy of contaminated soil was bioremediated.

CLEANUP STRATEGY

In 2006, under a non-PBC, 2,800 cy of contaminated soil will be bioremediated. The original soil estimated for bioremediation was based on the horizontal measurements of 240' x 140' - and a vertical estimate of 15'. This is equivalent to approximately 20,000 cy. The PBC will be written to address the remaining soil contamination.

The groundwater contamination source will be addressed through the excavation and bioremediation of the explosive-contaminated soil and through the use of groundwater in the bioremediation process. Groundwater removed for bioremediation could potentially be used at other composting sites other than B04.

A PBC is expected to be awarded in June 2006 to address this site through RIP/RC. If necessary, LTM will be performed after RIP/RC.

HWAAP-B12
101-10 CATCHMENT PIT

SITE DESCRIPTION

HWAAP-B12 is an inactive unlined surface impoundment located east of building 101-10 and measures 18 by 18 by 6 feet deep. The pit is eroded and partially filled with windblown sand. Two discharge pipes enter the impoundment from the west and an additional pipe enters from the south. No piles of dredged soil are evident at this impoundment. The impoundment was in operation from 1940 to the early 1970s and received large amounts of wastewater containing TNT and RDX. Groundwater is estimated to be at approximately 120 feet bgs.

Visible evidence of TNT-stained soils in and surrounding the impoundment was noted during investigations (1988-1992).

RI work in 1994 included surface soil and hand auger sampling, and CPT advanced to a depth of 56 feet. Three surface soil samples, one hand auger sample and two CPT soil samples were collected and analyzed for explosives and metals. Elevated concentrations of RDX (1,900 mg/kg), TNB (70 mg/kg), TNT (2,600 mg/kg), DNT (4.8 mg/kg) and beryllium (0.60 mg/kg) were detected in the soil. A low concentration of ammonium picrate was also detected. Investigation results show concentrations of explosives reduce significantly with depth.

All the groundwater monitoring (started in 1997) for the 101 Production Area Sites B13, B30, B20, B10, J12, B28A, A08, B26, J14, J06, J29 (a total of 16 wells) is now tracked under this site.

Soil contaminated with explosives was treated by bioremediation in 1999. A NFA decision document for soil was signed 4 August 2000.

A site-wide Groundwater Monitoring Plan was finalized in December 2005 and was funded under this site. As part of this plan, a ramp-down strategy will be included.

STATUS

REGULATORY DRIVER: RCRA, Subtitle C: Hazardous Wastes

RRSE: Medium

CONTAMINANTS: Explosives

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
RFA	198705	198808
CS	198705	198808
RFI/CMS	199405	199705
DES	199712	199805
CMI(C)	199810	199909
LTM	199912	203509

RC: 199909

CLEANUP STRATEGY

Groundwater monitoring will continue until FY35. LTM for the entire 101 Area is funded under this site.

HWAAP-B20
101-41 CATCHMENT PIT

SITE DESCRIPTION

HWAAP-B20 consists of three inactive unlined surface impoundments, two steel settling tanks, and one trench located southwest of Building 101-41. The impoundments are interconnected and range from 1,300 to 2,700 square feet in area and between 6 and 10 feet deep. Associated with them is a trench that runs west from the tank location. Two steel tanks placed in tandem between Building 101-41 and the impoundments allowed for settling of solids prior to discharge to the impoundments. This impoundment operated from 1940 to the early 1970s and received large amounts of waste water containing TNT and RDX. Visible evidence of TNT stained soils were observed in the impoundments.

RI work completed in 1994 included surface soil and hand auger sampling, and CPT. Seven surface soil samples, seven hand auger samples and four CPT soil samples were collected and analyzed for explosives and metals. Elevated concentrations of RDX (310 mg/kg), 1,3,5-TNB (87 mg/kg), 2,4,6-TNT (20,000 mg/kg), 2-Amino-DNT (20 mg/kg), and 2,4-DNT (18 mg/kg) were detected in soil exceeding the remediation criteria. None of the metals were detected at levels exceeding the soil remediation criteria.

The site was remediated under a pilot study of windrow composting. A total of 2,500 cubic yards from HWAAP-B20, -B32 and -I15 was successfully treated using various recipes in 1997. In 1997, TCE was discovered in groundwater. In 1999, additional soil gas surveys and subsurface sampling was conducted to delineate TCE in soil. Four passive vapor extraction wells were installed in 1999 and are still operating. An additional well was installed in 2002. The well sampling results show that concentrations of TCE decrease downgradient. A site soil closure plan has been developed. Optimized groundwater monitoring strategy is in place.

STATUS

REGULATORY DRIVER: RCRA, Subtitle C: Hazardous Waste

RRSE: High

CONTAMINANTS: Explosives, VOCs

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
RFA	198705	198808
CS	198705	198808
RFI/CMS	198905	200209
IRA	199705	199708
CMI(C)	200303	200503
CMI(O)	200504	200809

RIP: 200504
RC: 200809

CLEANUP STRATEGY

Until the MCLs are obtained, groundwater wells will be monitored to assess whether natural attenuation is effective. After no further action is approved by the regulators, the bioremediation system will be removed and 3 SVE wells will be plugged and abandoned.

A PBC is expected to be awarded in June 2006 to address this site through RIP/RC. If necessary, LTM will be performed after RIP/RC.

HWAAP-B24
102-52 ACID PIT

SITE DESCRIPTION

HWAAP-B24 is an open pit located adjacent to Building 102-52. The pit was used from 1950 to 1980 for discharged battery electrolyte waste fluid, battery acid spills and wash down water from the battery shop, Building 102-52. Acid and large quantities of water flowed from this building into this pit. Stained soil is evident in and around the subject pit.

RI work in 1994 included two surface soil samples, two hand auger samples and two CPT soil samples. Samples were collected within the pit and analyzed for explosives, metals, SVOCs, VOCs, PCBs, and TPH. Elevated RDX (150 mg/kg), TPH-diesel (34,000 mg/kg), and PCB-1260 (36 mg/kg) were detected. Low concentrations of SVOCs, explosives except RDX, and TPH-gasoline were also detected. Sampling results show contaminant concentrations generally decreased with depth.

STATUS

REGULATORY DRIVER: RCRA, Subtitle C: Hazardous Wastes

RRSE: High

CONTAMINANTS: TPH, PCBs, Explosives

MEDIA OF CONCERN: Soil

PHASES	Start	End
RFA	198705	198808
CS	198705	198808
RFI/CMS	199405	199805
DES	200502	200610
CMI(C)	200607	200709

RC: 200709

There are no known groundwater issues at this site. Estimated depth to groundwater is 100 feet bgs (USAEHA 1987).

CLEANUP STRATEGY

More sampling fieldwork is planned to delineate PCBs and explosives (RDX) in FY06 to determine soil volumes and waste disposal options. A soil removal will be performed to achieve RIP. The removal area is conservatively estimated to be 100’ x 30’ x 5’ for an approximate amount of 500 cy.

A PBC is expected to be awarded in June 2006 to address this site through RIP/RC. If necessary, LTM will be performed after RIP/RC.

HWAAP-B24A
BLDG 336; FUEL STORAGE

SITE DESCRIPTION

Former Building 336 is located in the Central Magazine area of HWAD. There are three 10,000-gallon underground storage tanks (USTs) at the site; two of which are out of service and historically contained gasoline. The third UST stores diesel fuel and has an associated dispensing system. These USTs are double-lined and have an active alarm system to detect leaks. In August 1999, a leak was discovered in the single-walled piping that conveyed gasoline from two 10,000-gallon USTs to the gasoline dispenser island that was located in the proximity of the former UST. An estimated 5,000 to 7,000 gallons of gasoline were released based upon inventory reconciliation records. An estimated 600 cubic yards of gasoline-impacted soil were excavated to depths of up to 20 feet bgs. The dispenser island and associated piping were removed, and the two USTs were taken out of service.

STATUS

REGULATORY DRIVER: RCRA, Subtitle C: Hazardous Wastes

RRSE: High

CONTAMINANTS: VOCs

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
RFA	200601	200602
CS	200602	200702
RFI/CMS	200607	200705
DES	200607	200707
CMI(C)	200607	200709
CMI(O)	200607	202709

RIP: 200709
RC: 202709

Thirty two monitoring wells have been installed since August 1999. During the first comprehensive groundwater monitoring event in November 2000, free product was observed in monitoring wells MW08 and MW09 with reported thicknesses of 3.8 and 2.2 feet, respectively. During the period in which monitoring has been conducted at the Building 336 vicinity, free product has been observed in monitoring wells MW08, MW09, MW10, and MW19; in addition, monitoring wells MW06 and MW14 have each been reported to contain free product once.

A product recovery program, which entailed monthly bailing, was started in June 2002. As of August 23, 2004, approximately 175 gallons of product had been recovered. Prior to the third quarter 2005, free product had not been observed in the site monitoring wells since July 2004, free product was observed in the third quarter 2005. Three separate but related remedial systems have been installed at the site to mitigate the known impacts to soil and groundwater resulting from the releases associated with the historical gasoline dispensing system (soil vapor extraction, ozone sparging, and bioventing)

CLEANUP STRATEGY

A PBC is expected to be awarded in June 2006 to address this site through RIP/RC. If necessary, LTM will be performed after RIP/RC.

HWAAP-B26
103-6 POL PIT

SITE DESCRIPTION

HWAAP-B26 is an inactive unlined surface impoundment located north of Building 103-6. The impoundment measures 25 x 85 x 8 feet. The impoundment operated from the 1940s to 1980s and received steam line blow down water, fuel oil, crude oil and other waste POL products. There is visible evidence of POL-stained soils in and around the pit.

In 1992, the impoundment was backfilled with soil to almost grade level. The pit is currently characterized by a depressed area approximately twice as large as the originally reported size of the impoundment.

RI work in 1994 included surface soil and hand auger sampling, and CPT soundings. Two hand auger samples and two CPT soil samples were collected from within the pit and analyzed for explosives, metals, SVOCs, VOCs, PCBs, and TPH. All groups of chemicals were detected in the surface and subsurface soil below action levels except for TPH. TPH was detected above action levels (16,000 mg/kg of TPH-D) in the soil.

There are no known groundwater issues at this site. Estimated depth to groundwater is 95 feet bgs (USAEHA 1997).

STATUS

REGULATORY DRIVER: RCRA, Subtitle C: Hazardous Wastes

RRSE: Low

CONTAMINANTS: TPH

MEDIA OF CONCERN: Soil

PHASES	Start	End
RFA	198705	198808
CS	198705	198808
RFI/CMS	199405	199812
DES	200607	200808
CMI(C)	200607	200909

RC: 200909

CLEANUP STRATEGY

CMI includes excavation of soil and source with off-site treatment, scheduled in FY09, of approximately 600 cy, based on size of the impoundment. Other strategies such as natural attenuation or incineration may be considered for cost reduction.

A PBC is expected to be awarded in June 2006 to address this site through RIP/RC. If necessary, LTM will be performed after RIP/RC.

HWAAP-B27A
103-16 CATCHMENT PIT (PAGE 1 OF 2)

SITE DESCRIPTION

HWAAP-B27A consists of eight inactive unlined surface impoundments and two drainage ditches located northwest of the ordnance washout Building 103-16. The eight impoundments occupy a total area of 10 acres. Each impoundment is up to 8 feet deep. Two drainage ditches exist at the site. One ditch extends northwest from the facility for approximately one half mile and the second ditch extends southeast of the facility and is branched to the northwest near the impoundments. The impoundments have eroded and are partially filled with windblown sand. There is visible evidence of several inches of ammonium picrate and TNT stained soils in the pits and sidewalls. The drainage ditches and the pits have potentially received up to 20,000 gallons of wastewater containing ammonium picrate, RDX, TNT, and red fuming nitric acid between 1946 and 1981.

STATUS

REGULATORY DRIVER: RCRA, Subtitle C: Hazardous Wastes

RRSE: Medium

CONTAMINANTS: Ammonium Picrate, Explosives

MEDIA OF CONCERN: Soil

PHASES	Start	End
RFA	198705	198808
CS	198705	198808
RFI/CMS	199405	199812
DES	200607	200709
CMI(C)	200607	200909

RC: 200909

Groundwater samples from 1974 detected nitrates above 70 µg/l (USGS Phase II investigation). No significant levels of TNT, RDX or ammonium picrate were detected in the groundwater. No groundwater remediation is required.

RI work in 1994 included collecting 15 surface soil samples, 14 hand auger samples and 7 CPT soil samples from the pits and the ditches, and analyzing samples for explosives and metals. Explosives were detected in surface soils in the ditches and in the impoundments above action levels. In general, the concentrations decreased with depth. TNT was detected at concentrations of 700 mg/kg and 340 mg/kg in surface soil samples and then decreased to 71 mg/kg at a depth of 5 feet. Additional sampling for ammonium picrate was performed in 2002 and confirmed high levels (12,000/9,100 mg/kg) at 6 - 12 inches. A decision document that approved bioremediation as the remedy was signed by the regulators in September 1995.

CLEANUP STRATEGY

Design and construction of the bioremediation pad is scheduled to occur in FY07. Excavation and on-site treatment by bioremediation of soils with high levels of explosive compounds have been approved by the regulators as a remedy at this site.

Total surface area of existing impoundments, to a 5-foot depth, is the basis for a conservative treatable volumes estimate. This yields a conservative estimate of between

5,000 to 20,000 cy. Previous estimates were less conservative using shallower depth removal estimates.

A PBC is expected to be awarded in June 2006 to address this site through RIP/RC. If necessary, LTM will be performed after RIP/RC.

After NFA is approved by the regulators, the bioremediation system will be removed.

HWAAP-B29
103-41 UNLINED PONDS

SITE DESCRIPTION

HWAAP-B29 is a series of inactive unlined surface impoundments connected by steel troughs covering an area of approximately 0.25 square miles north of Building 103-41. Nine impoundments at this site each measure approximately 25 x 100 x 3 feet, which were used for TNT wash water. Five larger ponds measure approximately 100 by 100 x 10 feet each. These larger impoundments were used for ammonium picrate explosives wash water from demilitarization.

Ammonium picrate, TNT-stained soils and black burn residue in the impoundments are evident. Groundwater sampling in 2000 at this site detected up to 29 µg/l of TNT and other organic, inorganic, and nitrogen-bearing compounds. Current groundwater monitoring shows low levels (below action levels) of explosives. Nitrate levels exceed MCLs. Monitoring Well IRPMW02 had nitrates at 57.9 mg/l.

STATUS

REGULATORY DRIVER: RCRA, Subtitle C: Hazardous Wastes

RRSE: High

CONTAMINANTS: TNT, RDX, Amatol, Ammonium Picrate, Nitrates

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
RFA	198705	198808
CS	198705	198808
RFI/CMS	199405	199812
DES	199901	199909
CMI(C)	200001	200609

RC: 200609

RI work in 1994 included groundwater sampling, surface soil and hand auger sampling, and CPT soundings. A pilot study successfully treated 300 cy of ammonium picrate-contaminated soil using windrow composting. A decision document that approved bioremediation as the remedy was signed by the regulators September 1995.

During 2003, through a teaming effort with the NDEP, PRGs for ammonium picrate were raised from 7 ppm to 120 ppm for an industrial site to expedite cleanup of this site. Phytoremediation was initiated in 2005 using 50 Fremont Cottonwood trees.

CLEANUP STRATEGY

The bioremediation system will be removed and all groundwater monitoring wells will be plugged and abandoned using FY06 funds. No further action is approved by the regulators. LTM will consist of groundwater monitoring which will be covered under the PBC.

HWAAP-C04

OLD BOMB POPPING FURNACE 1 (PAGE 1 OF 2)

SITE DESCRIPTION

This site is a metal furnace designated as Popping Furnace No. 1 located approximately ½ mile southwest of Rocket Mountain. It measures 10' x 10' x 5'. It has metal sides and a door with a grated top and dirt floor. The incinerator is bermed and partially covered with soil. Ash and burn residue cover the furnace floor. An open pit is located behind the site and was used as a disposal site for ash and burn residue. The period of operation began in the 1930s and ended in the 1950s.

A 1987 USAEHA preliminary assessment (PA) report indicates that the furnace was used to destroy all types of PEP by flashing. A 1989 investigation included soil sampling of three pits. Evidence of elevated concentrations of metals was found.

STATUS

REGULATORY DRIVER: RCRA, Subtitle C: Hazardous Wastes

RRSE: Low

CONTAMINANTS: Explosives, Metals, UXO

MEDIA OF CONCERN: Soil

PHASES	Start	End
RFA	198705	198808
CS	198705	198808
RFI/CMS	199509	199709
LTM	200109	203609

RC: 200108

Investigation in 1994 included AGPR surveying over the entire site at several target locations.

All ranges, which include some disposal areas at HWAD, were originally included in the IRP, but no progress on restoration could be made because these sites are not eligible for ER,A funding. These sites have now undergone review under the US Army Active/Inactive Range Inventory. Under the Phase II Range Inventory, ranges associated with Old Bomb, Walker Lake Test Range and the NIOTC Range have been determined to be active ranges. This site falls within the active range.

Groundwater monitoring began in 1989. IRP groundwater monitoring began in 1997. The state has indicated that further remedial action beyond groundwater monitoring is suspended pending change in site usage (range closure), or groundwater contaminant identification. Over the years, the monitoring frequency has been reduced and the analyte suite has been refined. No detects have ever been found.

Corrective action is required by RCRA permit. NDEP considers this site an uncharacterized site that will be addressed by the US Army when the active range is closed/transferred/transferring. Corrective action requirements at this site will be assessed in five year reviews (next review in FY08) based on groundwater results and change in range status.

HWAAP-C04
OLD BOMB POPPING FURNACE 1

CLEANUP STRATEGY

Monitoring for explosives in groundwater will continue in accordance with the approved base-wide groundwater monitoring plan until range closure. Three wells cover eleven Old Bomb sites -- HWAAP-A06B, A06C, A06D, A06E, C04, C05, G01B, G01C, I22, I23 and K07.

HWAAP-C05

OLD BOMB POPPING FURNACE #2 (PAGE 1 OF 2)

SITE DESCRIPTION

This site is a metal furnace designated as Old Bomb Popping furnace No. 2. The furnace is about 100 yards southeast of HWAAP-C04. HWAD personnel constructed the furnace by using a round steel cylinder measuring 4' x 20' and connected it to a 20' high smoke stack. The furnace is underground and bermed with earth. Ash and burn residue cover the furnace floor. An open pit is located behind the site and was used as a disposal site for ash and burn residue. The period of operation began in the 1930s and ended in the 1950s.

A 1987 USAEHA PA report indicates that the furnace was used to destroy all types of PEP (pyrotechnic, explosives and propellants) by flashing. A 1989 investigation included soil sampling of three pits. Evidence of elevated concentrations was found for metals. Investigation in 1994 included AGPR surveying over the entire site at several target locations.

STATUS

REGULATORY DRIVER: RCRA, Subtitle C: Hazardous Wastes

RRSE: Low

CONTAMINANTS: Explosives, Metals, UXO

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
RFA	198705	198808
CS	198705	198808
RFI/CMS	199509	199709
LTM	200109	203609

RC: 200108

All ranges, which include some disposal areas at HWAD, were originally included in the IRP, but no progress on restoration could be made because these sites are not eligible for ER,A funding. These sites have now undergone review under the US Army Active/Inactive Range Inventory. Under the Phase II Range Inventory, ranges associated with Old Bomb, Walker Lake Test Range and the NIOTC Range have been determined to be active ranges. This site falls within the active range.

Groundwater monitoring began in 1989. IRP groundwater monitoring began in 1997. The state has indicated that further remedial action beyond groundwater monitoring is suspended pending change in site usage (range closure), or groundwater contaminant identification. Over the years, the monitoring frequency has been reduced and the analyte suite has been refined. No detects have ever been found.

Corrective action is required by RCRA permit. NDEP considers this site an uncharacterized site that will be addressed by the US Army when the active range is closed/transferred/transferring. Corrective action requirements at this site will be assessed in five year reviews (next review in FY08) based on groundwater results and change in range status.

HWAAP-C05
OLD BOMB POPPING FURNACE #2

CLEANUP STRATEGY

Monitoring for explosives in groundwater will continue in accordance with the approved base-wide groundwater monitoring plan until range closure. Three wells cover eleven Old Bomb sites -- HWAAP-A06B, A06C, A06D, A06E, C04, C05, G01B, G01C, I22, I23 and K07.

HWAAP-G01B
OLD BOMB OB/OD GROUND 2

SITE DESCRIPTION

This is a waste treatment site that includes three individual ravines. Operations began in 1940 and ended in 1970. A 1987 USAEHA PA report indicated that many tons of ordnance were burned or detonated in this area. The waste was then left in piles at the site. There is visible staining of explosives and the site is littered with melted ordnance.

A 1989 investigation included geophysical surveying two test pits, and soil sampling. Evidence of elevated levels of metals was found.

Investigation in 1994 included AGPR surveying over many open pits with metallic debris. Also, an Army evaluation team visited the site to determine if the UXO at the site pose an imminent hazard.

STATUS

REGULATORY DRIVER: RCRA, Subtitle C: Hazardous Wastes

RRSE: High

CONTAMINANTS: Explosives, Metals, UXO

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
RFA	198705	198808
CS	198705	198812
RFI/CMS	199509	199709
LTM	200109	203609

RC: 200108

All ranges, which include some disposal areas at HWAD, were originally included in the IRP, but no progress on restoration could be made because these sites are not eligible for ER,A funding. These sites have now undergone review under the US Army Active/Inactive Range Inventory. Under the Phase II Range Inventory, ranges associated with Old Bomb, Walker Lake Test Range and the NIOTC Range have been determined to be active ranges. This site falls within the active range.

Groundwater monitoring began in 1989. IRP groundwater monitoring began in 1997. The state has indicated that further remedial action beyond groundwater monitoring is suspended pending change in site usage (range closure), or groundwater contaminant identification. Over the years, the monitoring frequency has been reduced and the analyte suite has been refined. No detects have ever been found.

Corrective action is required by RCRA permit. NDEP considers this site an uncharacterized site that will be addressed by the US Army when the active range is closed/transferred/transferring. Corrective action requirements at this site will be assessed in five year reviews (next review in FY08) based on groundwater results and change in range status.

CLEANUP STRATEGY

Monitoring for explosives in groundwater will continue in accordance with the approved base-wide groundwater monitoring plan until range closure. Three wells cover eleven Old Bomb sites -- HWAAP-A06B, A06C, A06D, A06E, C04, C05, G01B, G01C, I22, I23 and K07.

HWAAP-G01C
OLD BOMB OB/OD GROUND 3 (D AREA)

SITE DESCRIPTION

This waste treatment site is located approximately one-half mile southeast of Rocket Mountain. The site measures about 1,000' x 300' and is divided into 10 sections separated by 10' soil berms. Operation began in 1940 and ended in 1970. A 1987 USAEHA PA report indicates that PEP (pyrotechnic, explosives and propellants) was burned at this site. There is visible staining of explosives and the site is littered with ordnance.

A 1989 investigation included geophysical surveying, installation and sampling of ground water monitoring wells, two test pits, and soil sampling. Groundwater was encountered at 140 ft. bgs. Elevated levels of explosives (TNB 110 mg/kg) were detected in the soil.

Investigation in 1994 included AGPR surveying over the area. Also, an Army evaluation team visited the site to determine if the UXO at the site pose an imminent hazard. All ranges, which include some disposal areas at HWAD, were originally included in the IRP, but no progress on restoration could be made because these sites are not eligible for ER,A funding. These sites have now undergone review under the US Army Active/Inactive Range Inventory. Under the Phase II Range Inventory, ranges associated with Old Bomb, Walker Lake Test Range and the NIOTC Range have been determined to be active ranges. This site falls within the active range.

Groundwater monitoring began in 1989. IRP groundwater monitoring began in 1997. The state has indicated that further remedial action beyond groundwater monitoring is suspended pending change in site usage (range closure), or groundwater contaminant identification. Over the years, the monitoring frequency has been reduced and the analyte suite has been refined. No detects have ever been found. Corrective action is required by RCRA permit. NDEP considers this site an uncharacterized site that will be addressed by the US Army when the active range is closed/transferred/transferring. Corrective action requirements at this site will be assessed in five year reviews (next review in FY08) based on groundwater results and change in range status.

STATUS

REGULATORY DRIVER: RCRA, Subtitle C: Hazardous Wastes

RRSE: High

CONTAMINANTS: Explosives, UXO, Metals

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
RFA	198705	198808
CS	198705	198812
RFI/CMS	199509	199709
LTM	200108	203609

RC: 200108

CLEANUP STRATEGY

Monitoring for explosives in groundwater will continue in accordance with the approved base-wide groundwater monitoring plan until range closure. Three wells cover eleven Old Bomb sites -- HWAAP-A06B, A06C, A06D, A06E, C04, C05, G01B, G01C, I22, I23 and K07.

HWAAP-I02
110 GROUP OPEN BURNING PIT

SITE DESCRIPTION

This site originally included HWAAP-G02 and -G03. Those two subsites have been removed from the AEDB-R and all future work will refer to site HWAAP-I02. HWAAP-G02 and -G03 were incorporated into I02 instead of listing 3 separate sites because the sites are contiguous with one another.

HWAAP-I02 is a disposal area (approximately 4 acres) that includes pits for wastewater treatment and open trenches used for open burn and disposal of ordnance. Visible staining of explosives is present on the surface soils. The area appears to have been in operation from the early to late 1950s based on aerial photographs, however, use and history of the site is not well documented.

Previous investigations (1988, 1989 and 1992) included magnetometry surveys and exploration pits. Soil samples collected from these pits contained elevated concentrations of explosives and metals above state action levels. Insignificant amounts of solid nitrocellulose propellants can be found.

The CS in 1994 included 1.4 acres of 10-foot spacing GPR, within a 4-acre area of reconnaissance airborne GPR to delineate pits and trenches.

Four monitoring wells were installed to assess the impact to groundwater. Initially, concentrations of explosives in groundwater exceeded 70 µg/L, with elevated concentrations of metals. However, since 1997, metals and explosives have not been detected above action levels in groundwater.

STATUS

REGULATORY DRIVER: RCRA, Subtitle C: Hazardous Wastes

RRSE: Low

CONTAMINANTS: Explosives, Metals

MEDIA OF CONCERN: Soil

PHASES	Start	End
RFA	199207	199207
CS	199405	199501
RFI/CMS	200606	200610
DES	200607	200806
CMI(C)	200607	200909

RC: 200909

CLEANUP STRATEGY

The projected remedy will be a landfill cover with maintenance to prevent fugitive dust. This will be negotiated with NDEP regulators after further vertical delineation of contamination. UXO or MEC may be encountered. LTM will be conducted as required. A closure DD is anticipated in FY07.

HWAAP-I07
101-44 LANDFILL

SITE DESCRIPTION

HWAAP-I07 is an open pit landfill formerly used to store large scrap metal items. It is likely that diesel fuel from demilitarization operations (Bldg 101-44) was disposed of at this site. This site was used from the 1960s to the early 1980s

Investigation in 1994 included 10 soil gas samples and 8 near surface soil samples. The soil samples contained up to 15,000 mg/kg of TPH-D. There has been no impact to the groundwater from metals or explosives at this site, and no remediation of the ground water is recommended.

However, based on information obtained in 2000 concerning disposal of explosives at this site, additional investigation was initiated. This resulted in discovery of RDX at 70,000 ppm. Excavation, bioremediation and on-site treatment were completed May 2003 as the remedy for TPH and explosives contamination.

An addendum report supplement to the RI was approved by NDEP. The contaminants do not pose a risk to the groundwater.

STATUS

REGULATORY DRIVER: RCRA, Subtitle C: Hazardous Wastes

RRSE: High

CONTAMINANTS: TPH, RDX

MEDIA OF CONCERN: Soil

PHASES	Start	End
PA	199207	199207
SI	199405	199410
RI/FS	199405	199812
RA(C)	200110	200503

RC: 200503

CLEANUP STRATEGY

The decision document for site closure is in process and is expected to be completed in FY06.

HWAAP-I09
49-10 PIT/LANDFILL #1 & #2

SITE DESCRIPTION

HWAAP-I09 consists of two open pits near an area used to assemble ship mines, bombs and torpedo warheads. The period of operation is not documented. Wastewater and wash down water were reportedly discharged to these pits.

Investigation in 1994 included 10 soil gas samples, 6 surface soil samples and 15 subsurface soil samples collected from 3 borings to a depth of 56 feet. Three CPT (cone penetrometer test) soundings were advanced for a total of 106 feet to define the optimum depth to collect subsurface soils. The surface soil samples contained up to 1,260 mg/kg of TPH-D. Groundwater sampling showed hits of VOCs below action levels except for two wells. Sewer line breakage was thought to be the source, but in 1999, sewer lines were investigated and the findings eliminated potential release points. DES in 2000 included soil gas surveys to define the groundwater plume and development of site specific natural attenuation criteria.

STATUS

REGULATORY DRIVER: RCRA, Subtitle C: Hazardous Wastes

RRSE: Medium

CONTAMINANTS: TPH, VOCs, TCE

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
RFA	199207	199207
CS	199405	199410
RFI/CMS	199410	199812
DES	200001	200103
CMI(C)	200201	200709

RC: 200709

Two additional wells were installed in 2002 to evaluate the TCE in the groundwater. TCE (approximately 270 ppb) was found above action levels in one of the wells.

Five additional monitoring wells were installed in FY05 to delineate the plume. No TCE was detected above action levels.

CLEANUP STRATEGY

Limited TPH-contaminated soil removal, including fate and transport evaluation, will be required. A decision document/closure report for soil will be written by the PBC contractor and submitted to NDEP.

Groundwater monitoring for TCE will continue in accordance with the base-wide groundwater monitoring program. At the conclusion of LTM, all groundwater monitoring wells will be plugged and abandoned.

A PBC is expected to be awarded in June 2006 to address this site through RIP/RC. If necessary, LTM will be performed after RIP/RC.

HWAAP-I22
OLD BOMB OPEN BURNING PIT

SITE DESCRIPTION

This is an open burn burial pit located at the base of Rocket Mountain. There is no written history on this site and HWAD personnel were not able to speculate possible dates for use of this site. The site is littered with ordnance.

A 1989 investigation included one test pit and soil sampling. Evidence of elevated concentrations of metals and explosives in soil was found.

All ranges, which include some disposal areas at HWAD, were originally included in the IRP, but no progress on restoration could be made because these sites are not eligible for ER,A funding. These sites have now undergone review under the US Army Active/Inactive Range Inventory. Under the Phase II Range Inventory, ranges associated with Old Bomb, Walker Lake Test Range and the NIOTC Range have been determined to be active ranges. This site falls within the active range.

STATUS

REGULATORY DRIVER: RCRA, Subtitle C: Hazardous Wastes

RRSE: Low

CONTAMINANTS: Explosives, UXO, Metals

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
RFA	199207	199207
CS	199405	199605
RFI/CMS	199506	199709
LTM	200109	203609

RC: 200108

Groundwater monitoring began in 1989. IRP groundwater monitoring began in 1997. The state has indicated that further remedial action beyond groundwater monitoring is suspended pending change in site usage (range closure), or groundwater contaminant identification. Over the years, the monitoring frequency has been reduced and the analyte suite has been refined. No detects have ever been found.

Corrective action is required by RCRA permit. NDEP considers this site an uncharacterized site that will be addressed by the US Army when the active range is closed/transferred/transferring. Corrective action requirements at this site will be assessed in five year reviews (next review in FY08) based on groundwater results and change in range status.

CLEANUP STRATEGY

Monitoring for explosives in groundwater will continue in accordance with the approved base-wide groundwater monitoring plan until range closure. Three wells cover eleven Old Bomb sites -- HWAAP-A06B, A06C, A06D, A06E, C04, C05, G01B, G01C, I22, I23 and K07.

HWAAP-I23
OLD BOMB/ROCKET METAL LANDFILL

SITE DESCRIPTION

This site is an abandoned disposal site that covers about 15 acres. There is no written history on this site but interviews with HWAD personnel indicate that this was a dumping ground for metal debris around World War II.

A 1989 investigation included geophysical surveying, installing and sampling two groundwater monitoring wells, four test pits, and soil sampling.

The two wells are located down gradient of I23 and the depth to groundwater in this area is approximately 96 ft. bgs. Elevated levels of metals were detected in the soils.

Airborne ground penetrating radar (AGPR) surveying at nine targets spanning an area of 26 acres was conducted in 1994.

STATUS

REGULATORY DRIVER: RCRA, Subtitle C: Hazardous Wastes

RRSE: Low

CONTAMINANTS: Explosives, UXO, Metals

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	199207	199207
SI	199405	199410
RI/FS	199509	199709
LTM	200109	203609

RC: 200108

All ranges, which include some disposal areas at HWAD, were originally included in the IRP, but no progress on restoration could be made because these sites are not eligible for ER,A funding. These sites have now undergone review under the US Army Active/Inactive Range Inventory. Under the Phase II Range Inventory, ranges associated with Old Bomb, Walker Lake Test Range and the NIOTC Range have been determined to be active ranges. This site falls within the active range.

Groundwater monitoring began in 1989. IRP groundwater monitoring began in 1997. The state has indicated that further remedial action beyond groundwater monitoring is suspended pending change in site usage (range closure), or groundwater contaminant identification. Over the years, the monitoring frequency has been reduced and the analyte suite has been refined. No detects have ever been found.

Corrective action is required by RCRA permit. NDEP considers this site an uncharacterized site that will be addressed by the US Army when the active range is closed/transferred/transferring. Corrective action requirements at this site will be assessed in five year reviews (next review in FY08) based on groundwater results and change in range status.

CLEANUP STRATEGY

Monitoring for explosives in groundwater will continue in accordance with the approved base-wide groundwater monitoring plan until range closure. Three wells cover eleven Old Bomb sites -- HWAAP-A06B, A06C, A06D, A06E, C04, C05, G01B, G01C, I22, I23 and K07.

HWAAP-J03
BUILDING 70 DIESEL FUEL LEAK

SITE DESCRIPTION

This was an aboveground storage tank (AST) site located approximately 2 miles east of the HWAD gate on US Highway 95. Two 100,000-gallon ASTs were installed in the early 1940s to provide diesel fuel for Building 70 and other sites. Fuel leakage from the ASTs occurred for an unknown length of time. The depth to groundwater at Building 70 is approximately 113' below ground surface (bgs).

In 1991, over 34,000 cubic yards of soil were removed between the two tanks creating an excavation pit that measured about 80' x 110' x 35'.

Investigation in 1994 included line locating, drilling, sampling, installing of soil-gas monitoring probes and constructing a groundwater monitoring well. Analysis of groundwater indicates no presence of TPH-D above action levels of the State of Nevada.

STATUS

REGULATORY DRIVER: RCRA, Subtitle I: USTs

RRSE: Low

CONTAMINANTS: TPH, VOCs

MEDIA OF CONCERN: Soil

PHASES	Start	End
ISC	199207	199207
INV	199403	199404
CAP	199410	199509
IMP(C)	199607	199706
IMP(O)	199707	200709

RIP: 199707
RC: 200709

A pilot study for active and then passive bioremediation (bioventing) was initiated in July 1997. The excavation was filled with minimally petroleum-contaminated soil from all the other sites at the installation, eliminating the need to treat the soil at each site. The soil filled the excavation to within two feet of the top. Approximately 6,000 cubic yards of soil has undergone treatment for 8 years. The bioventing was conducted to degrade the contaminants in soil.

CLEANUP STRATEGY

Perform respiration test on the vents, followed by soil samples from borings to determine the contaminant concentration levels. Based on results, develop a work plan for site closure.

HWAD will propose NFA to NDEP based on soil and groundwater samples, as well as fate and transport modeling in FY07. Prepare the closure report decision document and remove the bioventing system after closure is approved.

A PBC is expected to be awarded in June 2006 to address this site through RIP/RC. If necessary, LTM will be performed after RIP/RC.

HWAAP-J29
BUILDING 103-5 LANDFILL

SITE DESCRIPTION

HWAAP-J29 is an area 800 x 400 feet that appears to have been used for disposal by open burning and burial. There is surface debris scattered round the area that consists mostly of charred wood, nails, packing material and some munitions packing items. Operations and activities at the site commenced in the 1940s.

RI work in 1994 completed activities included a magnetometry survey. This geophysical survey delineated numerous anomalies that appear to be buried metallic and non-metallic debris. Fourteen soil gas samples were collected with non-detect results.

Monitoring of groundwater monitoring wells at this location reveals no COCs above action levels.

Surface samples in a small area contained concentrations of explosives (RDX) as high as 17,000 mg/kg and TPH as high as 1,800 mg/kg. Five CPT soundings were advanced to depths up to 40 feet to determine the optimal depths to collect subsurface soil samples. Five subsurface soil samples were collected and did not contain any detectable concentrations of explosives. This site was consolidated with HWAAP-B29 for bioremediation.

STATUS

REGULATORY DRIVER: CERCLA

RRSE: Low

CONTAMINANTS: Metals, Explosives, Petroleum Hydrocarbons, Solvents

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	199207	199207
SI	199405	199410
RI/FS	199501	199812
RD	200306	200309
RA(C)	200404	200409

RC: 200409

CLEANUP STRATEGY

A site closure decision document will be generated in FY06. All groundwater monitoring wells will be plugged and abandoned based on the installation-wide groundwater monitoring program. Well abandonment will be conducted after no further action is approved by the regulators under HWAAP-B29.

HWAAP-K03

UST SITES INSTALLATION-WIDE (PAGE 1 OF 2)

SITE DESCRIPTION

Site HWAAP-K03 was broken up into 7 sub-sites (A-G) for easier tracking. Four of these sites (K03C, K03E, K03F, and K03G) were closed in 1996.

K03A: This site was a former underground storage tank (UST) site located south of Building 101-25. Seven USTs were in operation at this site from about 1936 to 1992 and leaked petroleum for a number of years. One tank site is considered closed. Three 10,000-gallon and three 12,000-gallon USTs were removed in 1991. The highest level of TPH-diesel found in the soil was 27,000 mg/kg at a depth of 14 feet. Groundwater at the site is approximately 100 ft bgs.

An enhanced bioventing unit was installed in 1998 and ceased operation in FY04.

K03B: This site was an underground storage tank (UST) site located at the intersection of Fuse Road and Salvage Road at Building 103-6. Three USTs were in operation at the site from about 1942 to 1992 and leaked petroleum for a number of years. When two USTs were removed in 1991, the highest level of TPH-diesel found in the soil was over 48,000 mg/kg at a depth of about 15 feet. Elevated levels of over 73,000 mg/kg of TPH-diesel at depths of about 17 feet were also found when a third UST was removed in 1993. Groundwater at the site is estimated to be ~100 ft bgs.

An enhanced bioventing unit was installed in 1998 and ceased operation in FY04.

K03D: K03D was an underground storage tank (UST) site located approximately one-quarter mile west of the main gate to HWAD at Building 13. Four USTs were in operation from about 1936 to 1993, and leaked petroleum for a number of years. Three 21,000-gallon USTs were removed in 1991 and the highest level of TPH-diesel detected in the soil was over 44,000 mg/kg at a depth of about 15 feet. Free product in the dirt cradle was also observed. The estimated depth to groundwater below Building 13 is 100 ft. bgs.

Further RI in 1992 detected 9,000 mg/kg of TPH-diesel in the soil at a depth of 25 ft. bgs. Also, a concentration of 130 mg/kg TPH-d was reported in the sample collected from the bottom of boring at 70' bgs.

A fourth UST was removed in 1993, but no sampling was done at that time. A pilot test showed bioremediation to be effective. The bioventing system, approved by the State of Nevada, was installed in 1996 and was left in place and turned over to the installation for continued operation.

STATUS

REGULATORY DRIVER: RCRA, Subtitle I: USTs

RRSE: Low

CONTAMINANTS: #2 and #6 Fuel Oil

MEDIA OF CONCERN: Soil

PHASES	Start	End
ISC	199208	199208
INV	199409	199509
CAP	199509	199805
DES	199509	199806
IMP(C)	199509	199912
IMP(O)	200001	200709

RIP: 200001
RC: 200709

UST SITES INSTALLATION-WIDE (PAGE 2 OF 2)

All Sub-Sites: Potential impact to groundwater will be assessed by modeling. Monitoring wells will be installed as suggested by the results of the model.

CLEANUP STRATEGY

For sub-site K03A (Bldg 101-25).confirmatory soil boring samples will be collected and a case made for closure of the site.

For sub-site K03B (Bldg 103-6) perform respiration test on the vents, followed by soil sampling from borings to determine the contaminant concentration levels.

For sub-site K03D (Bldg 13): following restoration of the bioventing system, a respiration test will be conducted on the vents, followed by soil sampling from borings to determine the contaminant concentration levels.

Based on results, develop a work plan for site closure. HWAD will propose NFA to NDEP based on soil samples, as well as fate and transport modeling in FY07. Prepare the closure report decision document and remove the bioventing system after closure is approved.

A PBC is expected to be awarded in June 2006 to address this site through RIP/RC. If necessary, LTM will be performed after RIP/RC.

HWAAP-K05
LUST SITE AT BLDG 117-3

SITE DESCRIPTION

In December 1984 and September 1993, there were reported releases of DF-2 from the 117-3 UST system. The groundwater at the time of the original release was at 12 ft bgs and had dropped to 15-17 bgs by the second release. The first release was approximately 1,300 gallons resulting in a Finding of Alleged Violation and Order from NDEP on 17 December 1984.

A study was conducted in 1985 that showed free product at the water table. Eight monitoring wells and one recovery well were installed in February 1989. The recovery system operated for four months, but was unsuccessful in extracting DF-2 from the water.

In September 1993, a loss of 60 gallons occurred at the 10,000-gallon tank. During the excavation an open, one-inch line was found. This line was a likely source of sub-surface overflow each time the tank was filled during the previous seventeen years. The 10,000-gallon tank was removed and the soil stockpiled on-site.

STATUS

REGULATORY DRIVER: RCRA, Subtitle I: USTs

RRSE: Low

CONTAMINANTS: #2 Fuel Oil

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
ISC	198407	198408
INV	198506	199407
CAP	199604	199608
IMP(C)	199709	199810
IMP(O)	199909	200709

RIP: 199909
RC: 200709

In 1994, a geohydrologic study was conducted to delineate the contamination. There are two plumes, one approximately 5,000 square ft of groundwater and 7,500 square ft of soil contamination and one 375-square ft of groundwater and 1,500-square ft of soil. The approximate volume of DF-2 fuel in the subsurface has been estimated at 4,000 gallons (large plume) and 400 gallons (small plume). The results of sampling indicate that two samples exceeded the state soil action level of 100 ppm and two groundwater samples exceeded the state free-product action level of ½ inch.

In 1996, enhanced intrinsic bioremediation (bioventing) was selected to treat the plumes and soil. The system was installed in 1996. A remedy-selection decision document was approved by NDEP in August 1996.

In January 2005, the COE revisited this site and sampled four monitoring wells. TPH-D was detected at 5,000 µg/l at one of the wells (#MW09).

CLEANUP STRATEGY

In FY07, develop a work plan to assess the extent of the plume (presence of free and dissolved product) and the effectiveness of the bioventing system. Perform confirmatory sampling of soil and groundwater to support a request for no further action. The bioventing system will continue to operate. Once NFA is approved, system and wells will be removed as appropriate. A PBC is expected to be awarded in June 2006 to address this site through RIP/RC. If necessary, LTM will be performed after RIP/RC.

HWAAP-K07
OLD BOMB DDT BURIAL SITE

SITE DESCRIPTION

This site is located in the Old Bomb area, an active range, south of both the main cantonment area and the town of Hawthorne. During the 1970s, a large quantity of containerized pesticides (DDT) was reportedly buried in this area. The exact location is unknown; however, a former employee has indicated the general area in which the containers might be found. The depth and quantity of material buried is unknown. A shallow monitoring well (HWAAP-02, depth 40 to 60 feet) is located north and down gradient of the site. Access to the site is restricted to authorized personnel only.

STATUS

REGULATORY DRIVER: RCRA, Subtitle C: Hazardous Wastes

RRSE: Low

CONTAMINANTS: DDT, Explosives

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
RFA	200005	200007
LTM	200201	203609

RC: 200108

All ranges, which include some disposal areas at HWAD, were originally included in the IRP, but no progress on restoration could be made because these sites are not eligible for ER,A funding. These sites have now undergone review under the US Army Active/Inactive Range Inventory. Under the Phase II Range Inventory, ranges associated with Old Bomb, Walker Lake Test Range and the NIOTC Range have been determined to be active ranges. This site falls within the active range.

Groundwater monitoring began in 1989. IRP groundwater monitoring began in 1997. The state has indicated that further remedial action beyond groundwater monitoring is suspended pending change in site usage (range closure), or groundwater contaminant identification. Over the years, the monitoring frequency has been reduced and the analyte suite has been refined. No detects have ever been found.

Corrective action is required by RCRA permit. NDEP considers this site an uncharacterized site that will be addressed by the US Army when the active range is closed/transferred/transferring. Corrective action requirements at this site will be assessed in five year reviews (next review in FY08) based on groundwater results and change in range status.

CLEANUP STRATEGY

Monitoring for DDT and explosives in groundwater will continue in accordance with the approved base-wide groundwater monitoring plan until range closure. Three wells cover eleven Old Bomb sites -- HWAAP-A06B, A06C, A06D, A06E, C04, C05, G01B, G01C, I22, I23 and K07.

IRP No Further Action Sites Summary

AEDB-R#	Site Title	Documentation/Reason for NFA	NFA Date
HWAAP-A03	Coal Ash Landfill (Not Open)	NFA Decision Document signed by NDEP 07/21/99	199810
HWAAP-A04	Babbit Closed Landfill	NFA Decision Document signed by NDEP 11/30/01	200009
HWAAP-A05	Mustard Gas Disposal Area	NFA Decision Document signed by NDEP 12/18/01	200103
HWAAP-A06A	Old Bomb Disposal Area 1	Not eligible for ER,A/BRAC funding	199209
HWAAP-A07	Naval Inshore Ops Tng Ctr Firing Range	Not eligible for ER,A/BRAC funding	198808
HWAAP-A08	Construction Debris Landfill	NFA Decision Document signed by NDEP 11/30/01	199812
HWAAP-A09A	Ammo Can Piles	NFA Decision Document signed by NDEP 08/04/00	199810
HWAAP-A09B	Battery Disposal Area	NFA Decision Document signed by NDEP 03/22/00	199803
HWAAP-A10	107-Rocket Impact Area	Not eligible for ER,A/BRAC funding	199709
HWAAP-A11	Mag 18-5 Disposal Pit	NFA Decision Document signed by NDEP 01/14/02	200106
HWAAP-B01	WADF Impoundment #1	SI determined there was no contamination	198808
HWAAP-B02	WADF Impoundment #2	SI determined there was no contamination	198808
HWAAP-B03	WADF Impoundment #3	SI determined there was no contamination	198808
HWAAP-B05	101-15 Impoundment	Five-year review determined that RA effectively remediated contamination below action levels.	199911
HWAAP-B06	101-13 Impoundment	Five-year review determined that RA effectively remediated contamination below action levels.	199909
HWAAP-B07	101-1 Catchment Pit	Five-year review determined that RA effectively remediated contamination below action levels.	199909

IRP No Further Action Sites Summary (cont.)

AEDB-R#	Site Title	Documentation/Reason for NFA	NFA Date
HWAAP-B08	101-1 Catchment Pit	Five-year review determined that RA effectively remediated contamination below action levels.	199909
HWAAP-B09	101-32 Catchment Pit	Five-year review determined that RA effectively remediated contamination below action levels.	199909
HWAAP-B10	101-3 Catchment Pit	Five-year review determined that RA effectively remediated contamination below action levels.	199909
HWAAP-B11A	101-31 Catchment Pit	Five-year review determined that RA effectively remediated contamination below action levels.	199909
HWAAP-B11B	101-34 Catchment Pit	Five-year review determined that RA effectively remediated contamination below action levels.	199909
HWAAP-B13	101-29/36 Catchment Pit	Five-year review determined that RA effectively remediated contamination below action levels.	199909
HWAAP-B15	101-16 Catchment Pit	NFA Decision Document signed by NDEP 03/22/00	199810
HWAAP-B16	101-18 Catchment Pit	Five-year review determined that RA effectively remediated contamination below action levels.	199909
HWAAP-B17A	101-20 Catchment Pit	Five-year review determined that RA effectively remediated contamination below action levels.	199909
HWAAP-B17B	101-20 Catchment Pit	Five-year review determined that RA effectively remediated contamination below action levels.	199909

IRP No Further Action Sites Summary (cont.)

AEDB-R#	Site Title	Documentation/Reason for NFA	NFA Date
HWAAP-B18	101-62 Catchment Pit	Five-year review determined that RA effectively remediated contamination below action levels.	199909
HWAAP-B19	101-11 Catchment Pit	Five-year review determined that RA effectively remediated contamination below action levels.	199909
HWAAP-B21	101-41/42 Catchment Pit	Five-year review determined that RA effectively remediated contamination below action levels.	199912
HWAAP-B22A	101-44 Catchment Pit	NFA Decision Document signed by NDEP 03/13/01	199909
HWAAP-B22B	101-44 Catchment Pit	NFA Decision Document signed by NDEP 03/09/01	199909
HWAAP-B23	101-30 Catchment Pit	Five-year review determined that RA effectively remediated contamination below action levels.	199909
HWAAP-B25	103-7 Inert Waste Impoundment	NFA Decision Document signed by NDEP 03/29/00	199912
HWAAP-B27B	103-8/10 Oxidation Ditch	Decision Document being prepared by the COE	200009
HWAAP-B27C	103-20 Surface Impoundment	Decision Document being prepared by the COE	200009
HWAAP-B28A	108-20 PO Spill Impoundment	NFA Decision Document signed by NDEP 11/22/99	199810
HWAAP-B28B	108-20 PO Spill Catchment	NFA Decision Document signed by NDEP 11/22/99	199810
HWAAP-B28C	104-8 EO Spill Impoundment	NFA Decision Document signed by NDEP 11/22/99	199810
HWAAP-B28D	104-8 EO Spill Basin	NFA Decision Document signed by NDEP 11/22/99	199810
HWAAP-B30	101-16 Catchment Basin	Five-year review determined that RA effectively remediated contamination below action levels.	199909

IRP No Further Action Sites Summary (cont.)

AEDB-R#	Site Title	Documentation/Reason for NFA	NFA Date
HWAAP-B31	101-65 Catchment Pit	Five-year review determined that RA effectively remediated contamination below action levels.	199909
HWAAP-B32	101-41 Catchment Pit	NFA Decision Document signed by NDEP 04/20/01	199709
HWAAP-B33	102-51 Catchment Pit	NFA Decision Document signed by NDEP 03/29/00	199810
HWAAP-B34	104-3 Catchment Pit	Not eligible for ER,A/BRAC funding	199812
HWAAP-C01A	102-31 Rotary Deactivation Furnace	NFA Decision Document signed by NDEP 11/30/01	200109
HWAAP-C02A	117-3 WADF Rotary Deactivation Furnace	Not eligible for ER,A/BRAC funding	198808
HWAAP-C03	Document Incinerator	Not eligible for ER,A/BRAC funding	198808
HWAAP-D01	106-22 & 106-23 Nonreactive HW Storage	Not eligible for ER,A/BRAC funding	198808
HWAAP-D02	115-9 & 113-73A Reactive HW Storage	Not eligible for ER,A/BRAC funding	198808
HWAAP-E01A	WADF WWTP	Not eligible for ER,A/BRAC funding	198808
HWAAP-E01B	WADF Sewage Evaporation Ponds	Not eligible for ER,A/BRAC funding	198808
HWAAP-E02	HWAAP STP Evap/Perc Ponds	Not eligible for ER,A/BRAC funding	198808
HWAAP-E03	Hawthorne Sewage Evap Ponds	Not eligible for ER,A/BRAC funding	198808
HWAAP-F01	Transfer Station, Prop Dispos Ofc (PDO)	Not eligible for ER,A/BRAC funding	198808
HWAAP-G01A	Old Bomb OB/OD Ground 1	Not eligible for ER,A/BRAC funding	198909
HWAAP-H01	Fire Training Pit	Decision Document being prepared by the COE	200006
HWAAP-H03	Road & Grounds Waste OB Pit	NFA Decision Document signed by NDEP 04/19/01	199812

IRP No Further Action Sites Summary (cont.)

AEDB-R#	Site Title	Documentation/Reason for NFA	NFA Date
HWAAP-H04	Navyside Landfill	NFA Decision Document signed by NDEP 02/15/02	199812
HWAAP-H05	Old Depot Laundry Washout	NFA Decision Document signed by NDEP 01/14/02	199912
HWAAP-I01	New Bomb Landfill	Not eligible for ER,A/BRAC funding	199709
HWAAP-I03	104-7 Pit #1	NFA Decision Document signed by NDEP 11/22/99	199812
HWAAP-I04	104-7 Pit #2	NFA Decision Document signed by NDEP 11/22/99	199812
HWAAP-I05	33-16 Landfill	NFA Decision Document signed by NDEP 11/22/99	199812
HWAAP-I06	Spill Site 30-5	NFA Decision Document signed by NDEP 09/15/99	199812
HWAAP-I08	Bldg 70 Pit/Landfill	Decision Document being prepared by the COE	200312
HWAAP-I11	49-9 Pit/Landfill	NFA Decision Document signed by NDEP 11/30/01	200109
HWAAP-I13	Bldg 10 Landfill/Discharge	NFA Decision Document signed by NDEP 11/22/99	199812
HWAAP-I14	Bldg 46 Oil Spill	NFA Decision Document signed by NDEP 10/31/01	199903
HWAAP-I15	101-42 Catchment Pit	NFA Decision Document signed by NDEP 08/04/00	199709
HWAAP-I17	104-10 Landfill	NFA Decision Document signed by NDEP 10/13/99	199812
HWAAP-I18	104-2 Hydrocarbon Spill	NFA Decision Document signed by NDEP 07/05/02	200006
HWAAP-I19	Navy Beach Test Range	Not eligible for ER,A/BRAC funding	199709
HWAAP-J02	115 Group Burn Area/Landfill	NFA Decision Document signed by NDEP 10/13/99	199812
HWAAP-J04	107 Area Drum Storage/Landfill	NFA Decision Document signed by NDEP 11/22/99	199909
HWAAP-J05	Dock 1 Landfill	NFA Decision Document signed by NDEP 10/13/99	199903

IRP No Further Action Sites Summary (cont.)

AEDB-R#	Site Title	Documentation/Reason for NFA	NFA Date
HWAAP-J06	Dock 2 Landfill	NFA Decision Document signed by NDEP 10/13/99	199903
HWAAP-J07	Dock 3 Landfill	NFA Decision Document signed by NDEP 10/13/99	199810
HWAAP-J08	Dock 4 Landfill	NFA Decision Document signed by NDEP 10/13/99	199810
HWAAP-J09	Dock 5 Landfill	NFA Decision Document signed by NDEP 10/13/99	199810
HWAAP-J10	Dock 6 Landfill	NFA Decision Document signed by NDEP 10/13/99	199810
HWAAP-J11	103-16 Landfill/Pile	NFA Decision Document signed by NDEP 08/04/00	199912
HWAAP-J12	Landscape Landfill	NFA Decision Document signed by NDEP 04/19/01	199812
HWAAP-J13	WADF South Dump	NFA Decision Document signed by NDEP 11/22/99	199810
HWAAP-J14	103-6 Trench	NFA Decision Document signed by NDEP 11/19/02	200109
HWAAP-J15	103-16 Landfill	NFA Decision Document signed by NDEP 08/04/00	199912
HWAAP-J16	111-113 Group Burn Area/Landfill	NFA Decision Document signed by NDEP 10/13/99	199812
HWAAP-J17	Thorne Drum Area	NFA Decision Document signed by NDEP 03/22/00	199810
HWAAP-J21	Bldg 97 Old Dock Area	NFA Decision Document signed by NDEP 11/22/99	199810
HWAAP-J22	50 Group Pits	NFA Decision Document signed by NDEP 11/22/99	199810
HWAAP-J23	Trench at Dusty Acres Area	NFA Decision Document signed by NDEP 03/22/00	199812
HWAAP-J24	Trench Near 50-60	NFA Decision Document signed by NDEP 11/22/99	199810
HWAAP-J25	Thorne Area Landfill	NFA Decision Document signed by NDEP 04/24/00	199902
HWAAP-J26	Landfill Turn Table Area	NFA Decision Document signed by NDEP 08/04/00	199709

IRP No Further Action Sites Summary (cont.)

AEDB-R#	Site Title	Documentation/Reason for NFA	NFA Date
HWAAP-J27	Landfill Camp Jumbo Area	NFA Decision Document signed by NDEP 08/04/00	199709
HWAAP-J28	108-3 Catchment Pits	NFA Decision Document signed by NDEP 11/30/01	200106
HWAAP-K01	Walker Lake Test Range	Not eligible for ER,A/BRAC funding	199709
HWAAP-K02	Walker Lake Test Range Disposal Pit	Not eligible for ER,A/BRAC funding	199709
HWAAP-K03C, E, F & G are sub-sites of HWAAP-K03 and have been remediated			
HWAAP-K04	Aboveground Storage Tanks at Bldg 70	NFA Decision Document signed by NDEP 09/25/95	199706
HWAAP-K08	Paint Storage Locker Sheds	NFA Decision Document signed by NDEP 05/06/03	200305
HWAAP-K09	Sump and Discharge Pipe	NFA Decision Document signed by NDEP 05/06/03	200305
HWAAP-K10	Buried Paint	Decision Document being prepared by the COE	200409
HWAAP-K11	Skeet Range	NFA Decision Document signed by NDEP 05/06/03	200305

Initiation of IRP: 1993

Past Phase Completion Milestones

RI/FS

K03 UST Sites	Sep 95
Group A SWMUs	Apr 95
Group B SWMUs Closure Report for 17 sites	Feb 96
Work Plan Completed Old Bomb Disposal Sites	May 96
Group A SWMUs, Additional Inv.	Apr 97
Group B SWMUs	Jan 99
Building 70	Sep 95

* RI/FS- A07, B20,B24, B26, B27, I02, I09/I10, J29, K06, K08, K09, K10

RD

UST Sites	Jan 97
West 101 Production Area	Feb 98

RA

UST Sites	Aug 98
West 101 Production Area Started	Sep 98
West 101 Production Area Completed	Oct 00
Bioventing Started	Oct 99
HWAAP-I07 Landfill soil removal	Dec 01
HWAAP-I08 Landfill soil removal	Dec 01
HWAAP-B29 Soil removal	Nov 00 - Sept 01

RA(O)

HWAAP-K03 Bioventing	1999

LTM

LTM Base-wide Started	Dec 97
50% reduction in groundwater monitoring	Aug 01

* LTM- A06B, A06C, A06D, A06E, B12, C04, C05, G01B, G01C, H04, I22, I23, J03, K05, K07

Decision (ROD)/Decision Document (DD): 73 closure decision documents completed, from Aug 96 to May 03

Completion Date of all RA(C) Activities: 2010

Schedule for Next Five Year Review: 2008

Completion Date of IRP (including LTM phase): 2036

Hawthorne Army Depot IRP Schedule

(Based on current funding constraints)

AEDB-R#	PHASE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+
HWAAP-A06C	LTM									202609
PBC	CMI(O)									
	LTM									203509

Prior Years Funds
Funding up through FY04: $35,539

Year	Site Information	Expenditures	FY Total
FY05		$3,099K	**$3,099K**

Total Funding up to FY05: $38,638K

Current Year Funds

Year	Site Information	Expenditures	FY Total
FY06		$3,996K	**$3,996K**

Total Funding FY06: $3,996K

Total Future Requirements: **$3,126K**

Total IR Program Cost *(from inception to completion of the IRP):* **$45,760**

HAWTHORNE ARMY DEPOT

Military Munitions Response Program

MMRP Summary

Total AEDB-R MMRP Sites/AEDB-R Sites with Response Complete: 17/0

AEDB-R Site Types

2 Explosive Ordnance Disposal Areas
15 Firing Ranges

Contaminants of Concern: Metals, Munitions, Explosives, Explosives-residuals

Media of Concern: Soil, Groundwater, Surface Water, Sediments

Total MMRP Funding

Prior Years (up to FY05):	$ 0K
Current Year (FY06):	$ 397K
Future Requirements (FY07+):	$285,408K
Total:	$208,805K

Duration of MMRP

Year of MMRP Inception: 2002
Year of MMRP RIP/RC: 2017/2019
Year of MMRP Completion Including LTM: 2049

MMRP Contamination Assessment

MMRP Contamination Assessment Overview

The Phase 3 Army Range Inventory was completed at Hawthorne Army Depot in May 2003. The inventory identified seventeen sites as eligible for the MMRP. The Phase 3 inventory serves as the PA under CERCLA. A site inspection is scheduled to begin at all of the sites in July 2005.

MMRP Cleanup Exit Strategy

The installation plans to complete SIs on all of the MMRP sites by September, 2006 and execute follow-on phases/actions as required in the individual site cleanup strategies

2003

- Final US Army Closed, Transferring and Transferred Range/Site Inventory for Hawthorne AD, NV, TechLaw, Inc., March

HAWTHORNE ARMY DEPOT

Military Munitions Response Program Site Descriptions

HWAAP-001-R-01
WALKER LAKE WATER TEST RANGE

SITE DESCRIPTION

This closed range in the northern part of the installation, still owned by the US Army, is 743 acres and was used from approximately 1942 until approximately 1975, primarily for the testing of rockets of various sizes up to 5-inch, depth charges, and other unidentified munitions. Although the IAP references depth charges being tested here, it should be noted that installation personnel state that empty depth charge cases were routinely deployed as buoys, raft buoys and swimming boundaries, and that over the years many of these have broken free, thus resulting in accounts of depth charge testing even though none actually occurred. UXO investigations of these cases have revealed an empty condition with no explosive components.

Walker Lake is receding, continuously exposing old rocket munitions that were formerly on the lake bottom. Clearance efforts have found rockets, depth charges, shotgun shells, fuzes, fragments of propellants, and TNT. This site had an AEDB-R site ID of HWAAP-K01. The area of this range is partly on undeveloped installation land and partly on Walker Lake, which is used for recreational purposes. This portion of the range lies within the installation boundary; a separate portion lying outside the installation boundary is addressed under HWAAP-021-R-01, Walker Lake Water Test Range (TD).

STATUS

REGULATORY DRIVER: CERCLA

RAC: High Risk

CONTAMINANTS: Metals, Munitions, Explosives, Explosives-residuals

MEDIA OF CONCERN: Soil, Sediments, Surface Water

PHASES	Start	End
PA	200209	200305
SI	200610	200709
RI/FS	201010	201109
RD	201410	201509
RA(C)	201610	201709
LTM	201710	204709

RC: 201709

CLEANUP STRATEGY

Pending further investigation, munitions and sediment removal may be planned. LUCs will be implemented after the removal. MEC monitoring is planned after removal for 30 years.

HWAAP-002-R-01
WALKER LAKE LAND TEST RANGE (TD)

SITE DESCRIPTION

This transferred range to the northeast of the installation, owned by the Bureau of Land Management, is 14 acres and was used from approximately 1942 until approximately 1954 for the testing of 7.2-inch Hedgehog depth charges. It should be noted that this range encompasses both 8,000- and 9,000-foot ranges, which were both shown on maps of this range. There is no possibility that the 7.2-inch Hedgehog depth charge could leave the installation boundary, as the maximum range for the 7.2-inch Hedgehog as tested at HWAD was 300 yards, according to OP 1415. No remediation activities are known to have taken place at this site. The area of this range is undeveloped but is likely used for recreational purposes. This range was never owned by DoD. This portion of the range lies outside the installation boundary; a separate portion located inside the installation boundary is addressed under HWAAP-008-R-01, Walker Lake Land Test Range.

STATUS

REGULATORY DRIVER: CERCLA

RAC: Serious Risk

CONTAMINANTS: Metals, Munitions, Explosives, Explosives-residuals

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	200209	200305
RI/FS	201010	201109
RD	201410	201509
RA(C)	201610	201709
LTM	201710	204709

RC: 201709

CLEANUP STRATEGY

Pending further investigation munitions and soil removal may be planned. LUCs will be implemented after the removal. MEC monitoring is planned after removal for 30 years.

HWAAP-006-R-01
OLD BOMB ROCKET FIRING RANGE - SOUTH

SITE DESCRIPTION

This transferred range located south of the Old Bomb Area in the southeastern portion of the installation, owned by the Bureau of Land Management, is 3,504 acres and was used from approximately 1968 until approximately 1980 for the testing of various rockets. Approximately 25,000 rounds were fired here. The length of the safety fan, 11,000 yards, was derived from munitions descriptions for air-to-ground 5-inch rockets found in a Navy technical manual. This safety fan was assumed to be the nearest match in the manual for the rockets fired at this range. This area has been swept by the operating contractor of HWAD and by military EOD teams. This range was never owned by DoD.

CLEANUP STRATEGY

Pending further investigation munitions and soil removal may be planned. LUCs will be implemented after the removal. MEC monitoring is planned after removal for 30 years.

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STATUS

REGULATORY DRIVER: CERCLA

RAC: Low Risk

CONTAMINANTS: Metals, Munitions, Explosives, Explosives-residuals

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	200209	200305
SI	200610	200709
RI/FS	201010	201109
RD	201410	201509
RA(C)	201610	201709
LTM	201710	204709

RC: 201709

HWAAP-007-R-01
1958 ARMED FORCES DAY AREA

SITE DESCRIPTION

This closed range near the administrative area of the installation, still owned by the US Army, is 103 acres and was used in 1958 for a simulated assault on Armed Forces Day. In addition, an interviewee stated that the same area was also used in 1955 for a similar attack, which left practice and smoke grenades in the area. A picture of the 1958 event shows a practice bomb being dropped on the area, and a picture of the 1955 event showed personnel carrying small arms. No remediation activities are known to have taken place at this range. The area of this range is a ball ground. However, the area immediately surrounding the site is industrial and administrative.

STATUS

REGULATORY DRIVER: CERCLA

RAC: Serious Risk

CONTAMINANTS: Metals, Munitions, Explosives, Explosives-residuals

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	200209	200305
RI/FS	201010	201109
RD	201410	201509
RA(C)	201610	201709
LTM	201710	204709

RC: 201709

CLEANUP STRATEGY

Pending further investigation munitions and soil removal may be planned. LUCs will be implemented after the removal. MEC monitoring is planned after removal for 30 years.
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HWAAP-008-R-01
WALKER LAKE LAND TEST RANGE

SITE DESCRIPTION

This closed range in the northeastern part of the installation, still owned by the US Army, is 506 acres and was used from approximately 1942 until approximately 1954 for the testing of 7.2-inch hedgehog depth charges. It should be noted that this range encompasses both 8,000- and 9,000-foot ranges, which were both shown on maps of this range. There is no possibility that the 7.2-inch Hedgehog depth charge could leave the installation boundary, as the maximum range for the 7.2-inch Hedgehog as tested at HWAD was 300 yards, according to OP 1415. This range is part of a compliance agreement with the US Army and the State of Nevada and has been swept on numerous occasions for removal of munitions debris and UXO. The area of this range is undeveloped. This portion of the range lies within the installation boundary; a separate portion lying outside the installation boundary is addressed under HWAAP-002-R-01, Walker Lake Land Test Range (TD).

STATUS

REGULATORY DRIVER: CERCLA

RAC: Serious Risk

CONTAMINANTS: Metals, Munitions, Explosives, Explosives-residuals

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	200209	200305
RI/FS	201010	201109
RD	201410	201509
RA(C)	201610	201709
LTM	201710	204709

RC: 201709

CLEANUP STRATEGY

Pending further investigation munitions and soil removal may be planned. LUICs will be implemented after the removal. MEC monitoring is planned after removal for 30 years.

HWAAP-009-R-01
ASROC RANGES

SITE DESCRIPTION

This closed range, still owned by the US Army, is 6,616 acres and was used in 1957 and 1958, and again from approximately 1962 to 1965, for the testing of anti-submarine rockets (ASROCs). These rockets contained inert warheads only. This range is the combination of three separate ranges where ASROCs were fired -- ASROC Range A, ASROC Range B/Barlow Ranch, and Navy Beach Test Range. The ranges were combined into one ASROC Range to reduce the confusion generated by the multiple overlaps of these three ranges with the Walker Lake Water Test Range. No remediation activities are known to have taken place at this range. The area of this range is primarily within Walker Lake, which is used for recreational purposes, although some shoreline and adjacent land is also encompassed by this range. The shoreline is undeveloped. A portion of this range is also located outside the installation boundary, and is addressed under HWAAP-010-R-01, ASROC Ranges (TD).

STATUS

REGULATORY DRIVER: CERCLA

RAC: Moderate Risk

CONTAMINANTS: Metals, Munitions, Explosives-residuals

MEDIA OF CONCERN: Surface Water, Sediments

PHASES	Start	End
PA	200209	200305
RI/FS	201010	201109
RD	201410	201509
RA(C)	201610	201709
LTM	201710	204709

RC: 201709

CLEANUP STRATEGY

Pending further investigation munitions and sediment removal may be planned. LUCs will be implemented after the removal. MEC monitoring is planned after removal for 30 years.

HWAAP-010-R-01
ASROC RANGES (TD)

SITE DESCRIPTION

This transferred range, partly owned by the State of Nevada and partly owned by the Bureau of Land Management, is 6,414 acres and was used in 1957 and 1958, and again from approximately 1962 to 1965, for the testing of anti-submarine rockets (ASROCs). These rockets contained inert warheads only. This range is the combination of three separate ranges where ASROCs were fired -- ASROC Range A, ASROC Range B/Barlow Ranch, and Navy Beach Test Range. The ranges were combined into one ASROC Range to reduce the confusion generated by the multiple overlaps of these three ranges with the Walker Lake Water Test Range. No remediation activities are known to have taken place at this range. The area of this range is primarily within Walker Lake, which is used for recreational purposes, although some shoreline and adjacent land is also encompassed by this range. The shoreline is undeveloped. A portion of this range is located inside the installation boundary, and is addressed under HWAAP-009-R-01, ASROC Ranges. This range was never owned by DoD.

STATUS

REGULATORY DRIVER: CERCLA

RAC: Moderate Risk

CONTAMINANTS: Metals, Munitions, Explosives-residuals

MEDIA OF CONCERN: Soil, Sediments, Surface Water, Groundwater

PHASES	Start	End
PA	200209	200305
RI/FS	201010	201209
RD	201510	201609
RA(C)	201610	201709
LTM	201710	204709

RC: 201709

CLEANUP STRATEGY

Pending further investigation munitions, soil and sediment removal may be planned. LUCs will be implemented after the removal. MEC monitoring is planned after removal for 30 years.

HWAAP-011-R-01
1957 ARMED FORCES DAY AREA

SITE DESCRIPTION

This transferred demonstration area, owned by the City of Hawthorne, is 15 acres and was used in 1957 for a simulated assault on Armed Forces Day by the Nevada Air National Guard. The same area was also used in 1956 for a similar demonstration event, and in 1965 for training Marine Corps Reservists. Among the three events, practice rockets and hand grenades, as well as practice bombs, smoke bombs, simulated bomb devices, small arms, and detonators were used in the area. The simulated bomb devices used in the exercises were 55-gallon drums of gasoline with an attached detonation cord, which fired one-quarter pound blocks of TNT. No remediation activities have occurred at this demonstration site, and no UXO or munitions items have been reported at this demonstration site. A portion of this demonstration site includes the Hawthorne Cemetery and the Hawthorne Municipal Airport. The demonstration site was formerly owned by DoD, but was transferred to the City of Hawthorne in 1963.

STATUS

REGULATORY DRIVER: CERCLA

RAC: High Risk

CONTAMINANTS: Metals, Munitions, Explosives, Explosives-residuals

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	200209	200305
SI	201510	201609
RI/FS	201610	201709
RD	201710	201809
RA(C)	201810	201909
LTM	201910	204909

RC: 201909

CLEANUP STRATEGY

Pending further investigation munitions, soil and sediment removal may be planned. LUCs will be implemented after the removal. MEC monitoring is planned after removal for 30 years.

HWAAP-012-R-01
PRE-1940 DETONATING PITS (TD)

SITE DESCRIPTION

This transferred site lying to the east of the installation, owned by the Bureau of Land Management, is 892 acres and was used from approximately 1930 until approximately 1940, presumably for the detonation of obsolete munitions. Although no documented information about this site was available other than its presence on a map, an interviewee stated that the types of munitions that would have been detonated at such a site would include fuzes, bombs, rockets, landmines, and mortars. This area represents a kickout area outside the installation boundary and was identified based on the longest kickout distance among the munitions likely detonated here. It should also be noted that installation personnel stated that no current employees recall the use of these pits, that they have not seen these pits characterized in other reports, and that the recent unsigned, unapproved contractor-developed map created in 1980, which includes these pits, is likely incorrect. No remediation activities are known to have taken place at this site, except a site reconnaissance in this area which identified only one inert piece of ordnance that was likely the result of kickouts from the Old Bomb Area detonations. The area of this site is undeveloped but is likely used for recreational purposes. This range was never owned by DoD.

STATUS

REGULATORY DRIVER: CERCLA

RAC: Moderate Risk

CONTAMINANTS: Metals, Munitions, Explosives, Explosives-residuals

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	200209	200305
RI/FS	201010	201109
RD	201410	201509
RA(C)	201610	201709
RA(O)	201710	203209
LTM	203210	204709

RIP: 201710
RC: 203209

CLEANUP STRATEGY

Pending further investigation munitions, soil and sediment removal may be planned. LUCs will be implemented after the removal. MEC monitoring is planned after removal for 30 years.

HWAAP-013-R-01
PRE-1940 DETONATING PITS

SITE DESCRIPTION

This closed site in the eastern part of the installation, still owned by the US Army, is 3,140 acres and was used from approximately 1930 until approximately 1940, presumably for the detonation of obsolete munitions. Although no documented information about this site was available other than its presence on a map, an interviewee stated that the types of munitions that would have been detonated at such a site would include fuzes, bombs, rockets, landmines, and mortars. It should also be noted that installation personnel stated that no current employees recall the use of these pits, that they have not seen these pits characterized in other reports, and that the recent unsigned, unapproved contractor-developed map created in 1980, which includes these pits, is likely incorrect. No remediation activities are known to have taken place at this site, other than a site reconnaissance in this area which, according to a Hawthorne Army Depot employee, identified only one inert piece of ordnance, which installation personnel say was likely the result of kickouts from the Old Bomb Area detonations. The area of this site is undeveloped but is likely used for recreational purposes. However, the area immediately surrounding the site is industrial. A second portion of this range is outside the installation boundary and is addressed under HWAAP-012-R-001, Pre-1940 Detonating Pits (TD).

STATUS

REGULATORY DRIVER: CERCLA

RAC: Serious Risk

CONTAMINANTS: Metals, Munitions, Explosives, Explosives-residuals

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	200209	200305
RI/FS	201010	201109
RD	201410	201509
RA(C)	201610	201709
RA(O)	201710	203209
LTM	203210	204709

RIP: 201709
RC: 203209

CLEANUP STRATEGY

Pending further investigation munitions and soil removal may be planned. LUCs will be implemented after the removal. MEC monitoring is planned after removal for 30 years.

HWAAP-015-R-01
COREY PEAK/TV HILL

SITE DESCRIPTION

This transferred range to the southwest of the installation, owned by the Bureau of Land Management, is 443 acres and was used from approximately 1968 until approximately 1970 for the testing of rockets and their associated fuzes. The land was leased by the US Army from the Bureau of Land Management when it was in use. Approximately 400 inert rounds and 10 live rounds were fired here. According to Hawthorne Army Depot employee, debris removal from this area has been conducted under the direction of the State of Nevada, and the State of Nevada considers this range closed. The area of this range remains undeveloped. This range was used under the authority of a MOA with the BLM.

CLEANUP STRATEGY

Pending further investigation munitions and soil removal may be planned. ICs will be implemented after the removal. MEC monitoring is planned after removal for 30 years.

STATUS

REGULATORY DRIVER: CERCLA

RAC: Moderate Risk

CONTAMINANTS: Metals, Munitions, Explosives, Explosives-residuals

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	200209	200305
SI	201510	201609
RI/FS	201610	201709
RD	201710	201809
RA(C)	201810	201909
LTM	201910	204909

RC: 201909

HWAAP-016-R-01
FUZE TEST AREA

SITE DESCRIPTION

This closed site to the northeast of the installation production facilities, still owned by the US Army, is 5 acres and was used from approximately 1945 until approximately 1955, evidently for the testing of fuzes. The site was recently discovered, so little is known about its history. Fuzes from the 1940s and 1950s were identified on the ground in this area. No remediation activities are known to have taken place at this range. The area of this range remains undeveloped. However, the area immediately surrounding the site is industrial.

CLEANUP STRATEGY

Pending further investigation munitions and soil removal may be planned. LUCs will be implemented after the removal. MEC monitoring is planned after removal for 30 years.

STATUS

REGULATORY DRIVER: CERCLA

RAC: Moderate Risk

CONTAMINANTS: Metals, Munitions, Explosives, Explosives-residuals

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	200209	200305
RI/FS	201010	201109
RD	201410	201509
RA(C)	201610	201709
LTM	201710	204709

RC: 201709

HWAAP-017-R-01
KICKOUT OUTSIDE NEW BOMB AREA

SITE DESCRIPTION

This transferred range, owned by the US Forest Service, consists of 58 acres located 22 miles south of the main installation. From approximately 1947 until approximately 1987 kickouts from the detonation of a variety of munitions, including mortars, rockets, torpedoes, fuzes, and mines at the New Bomb disposal area landed here. Although the detonating area is still active, an interviewee stated that kickouts are no longer projected outside the boundary of the disposal area. This area was cleared of ordnance in 1987 and is currently undeveloped but likely used for recreational purposes. This range was never owned by DoD.

CLEANUP STRATEGY

Pending further investigation munitions and soil removal may be planned. LUCs will be implemented after the removal. MEC monitoring is planned after removal for 30 years.

STATUS

REGULATORY DRIVER: CERCLA

RAC: Moderate Risk

CONTAMINANTS: Metals, Munitions, Explosives, Explosives-residuals

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	200209	200305
RI/FS	201010	201109
RD	201410	201509
RA(C)	201610	201709
RA(O)	201710	203209
LTM	203210	204709

RIP: 201709
RC: 203209

HWAAP-018-R-01
MONO LAKE

SITE DESCRIPTION

This transferred range, owned by the State of California, is 99 acres and was used in 1965 for the testing of ten 9,200-pound TNT charges. According to interviewees, the beach at the lake was entirely remediated in the 1970s within a few years after the completion of these tests. The remediation included removal of debris from the beach. The water bottom of the lake was not remediated; however, the US Navy, then operators of the Naval Ammunition Depot, Hawthorne, restored the site and no residue or explosives remain. The area of this range is part of Mono Lake, located in east-central California. The range is open water that is used for recreational purposes. This range was never owned by DoD.

STATUS

REGULATORY DRIVER: CERCLA

RAC: Low Risk

CONTAMINANTS: Metals, Munitions, Explosives, Explosives-residuals

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	200209	200305
RI/FS	201010	201109
RA(C)	201610	201709
LTM	201710	204709

RC: 201709

CLEANUP STRATEGY

Pending further investigation munitions and soil removal may be planned. LUCs will be implemented after the removal. MEC monitoring is planned after removal for 30 years.

HWAAP-020-R-01
WHISKEY FLAT

SITE DESCRIPTION

This transferred range, to the south of the Old Bomb Area located in the southeastern corner of the installation, owned by the Bureau of Land Management, is 9,115 acres. This range encompassed the safety fan for test rockets from approximately 1968 to 1975. It also received kickouts from OB/OD operations in the "Old Bomb Area" portion of the installation in 1946. An Army bulletin from that time noted that 10 personnel were in the Old Bomb Area destroying obsolete and defective ammunition, with 1,200 pounds of TNT used in each blast. Some of the kickouts from this operation went outside the installation boundary. In addition, 3 acres of the northernmost extreme portions of this area were part of the safety fan for the Carter Mortar Test Range, which was used to test mortars from approximately 1971 to 1990. It should be noted that installation personnel stated that none of the munitions from the Carter Mortar Test Range would have gone outside of the installation boundary. As of mid-1995, 8,259 acres of Whiskey Flat had been cleared of hazardous ordnance and inert ordnance residue. The ordnance retrieved during this clearance project included rockets, rocket fuzes, demolition charges, and TNT. It is unknown what, if any, remediation activities have taken place in this area since 1995. The area of this range is undeveloped but is likely used for recreational purposes. This range was never owned by DoD.

STATUS

REGULATORY DRIVER: CERCLA

RAC: Low Risk

CONTAMINANTS: Metals, Munitions, Explosives, Explosives-residuals

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	200209	200305
RI/FS	201010	201109
RD	201410	201509
RA(C)	201610	201709
RA(O)	201710	203209
LTM	203210	204709

RIP: 201709
RC: 203209

CLEANUP STRATEGY

Pending further investigation munitions and soil removal may be planned. LUCs will be implemented after the removal. MEC monitoring is planned after removal for 30 years.

HWAAP-021-R-01
WALKER LAKE WATER TEST RANGE (TD)

SITE DESCRIPTION

This transferred range to the north of the installation, owned by the State of Nevada and the Bureau of Land Management, is 261 acres and was used from approximately 1942 until approximately 1975, primarily for the testing of rockets, depth charges, and other unidentified munitions. Walker Lake is receding, continuously exposing old munitions that were formerly on the lake bottom. Although the IAP references that depth charges were fired here, it should be noted that installation personnel state that empty depth charge cases were routinely deployed as buoys, raft buoys and swimming boundaries, and that over the years many of these have broken free, thus resulting in accounts of depth charge testing even though none actually occurred. UXO investigations of these cases have revealed an empty condition with no explosive components. Clearance efforts have found rockets, small arms, depth charges, fuzes, fragments of propellants, and TNT. The area of this range is partly on undeveloped land to the northwest of Walker Lake and partly on Walker Lake. Both the undeveloped land and the lake are used for recreational purposes. This range was never owned by DoD. This portion of the range lies outside the installation boundary; a separate portion lying outside the installation boundary is addressed under HWAAP-001-R-01, Walker Lake Water Test Range.

STATUS

REGULATORY DRIVER: CERCLA

RAC: Moderate Risk

CONTAMINANTS: Metals, Munitions, Explosives, Explosives-residuals

MEDIA OF CONCERN: Sediments, Surface Water

PHASES	Start	End
PA	200209	200305
RI/FS	201010	201109
RD	201410	201509
RA(C)	201610	201709
LTM	201710	204709

RC: 201709

CLEANUP STRATEGY

Pending further investigation munitions and sediment removal may be planned. LUCs will be implemented after the removal. MEC monitoring is planned after removal for 30 years.

HWAAP-022-R-01
OLD BOMB ROCKET FIRING RANGE - EAST

SITE DESCRIPTION

This transferred range located east of the Old Bomb Area in the southeastern portion of the installation, owned by the Bureau of Land Management, is 15,496 acres and was used from approximately 1968 until approximately 1980 for the testing of various rockets. The length of the safety fan, 11,000 yards, was derived from munitions descriptions for air-to-ground 5-inch rockets found in a Navy technical manual. This safety fan was assumed to be the nearest match in the manual for the rockets fired at this range. These rockets were fired from a fixed land launch point. The US Marine Corps has conducted several UXO sweeps throughout the area known as Old Bomb, including this area. Other than these sweeps, no remediation activities are known to have taken place in this area. The area of this range is undeveloped but is likely used for recreational purposes. This range was never owned by DoD.

STATUS

REGULATORY DRIVER: CERCLA

RAC: Low Risk

CONTAMINANTS: Metals, Munitions, Explosives, Explosives-residuals

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	200209	200305
SI	200610	200709
RI/FS	201010	201109
RD	201410	201509
RA(C)	201610	201709
LTM	201710	204709

RC: 201709

CLEANUP STRATEGY

Pending further investigation munitions and soil removal may be planned. LUCs will be implemented after the removal. MEC monitoring is planned after removal for 30 years.

MMRP Schedule

Initiation of MMRP: 2002

Past Phase Completion Milestones

2003
• PA on all sites, March

Projected ROD/DD Approval Dates: N/A

Projected Construction Completion: 2017

Schedule for Five Year Reviews: unknown

Estimated Completion Date of MMRP including LTM: 2047

Hawthorne Army Depot MMRP Schedule

(Based on current funding constraints)

AEDB-R#	PHASE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+
HWAAP-001-R-01	SI									
	RIFS									
	RD									201509
	RAC									201709
	LTM									204709
HWAAP-002-R-01	RIFS									
	RD									201509
	RAC									201709
	LTM									204709
HWAAP-006-R-01	SI									
	RIFS									
	RD									201509
	RAC									201709
	LTM									204709
HWAAP-007-R-01	RIFS									
	RD									201509
	RAC									201709
	LTM									204709
HWAAP-008-R-01	RIFS									
	RD									201509
	RAC									201709
	LTM									204709
HWAAP-009-R-02	RIFS									
	RD									201509
	RAC									201709
	LTM									204709
HWAAP-010-R-01	RIFS									
	RD									201509
	RAC									201709
	LTM									204709
HWAAP-011-R-01	SI									201609
	RIFS									201709
	RD									201809
	RAC									201909
	LTM									204909

AEDB-R#	PHASE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+
HWAAP-012-R-01	RIFS									
	RD									201509
	RAC									201709
	RAO									203209
	LTM									204709
HWAAP-013-R-03	RIFS									
	RD									201509
	RAC									201709
	RAO									203209
	LTM									204709
HWAAP-015-R-04	SI									201609
	RIFS									201709
	RD									201809
	RAC									201909
	LTM									204909
HWAAP-016-R-05	RIFS									
	RD									201509
	RAC									201709
	LTM									204709
HWAAP-017-R-06	RIFS									
	RD									201509
	RAC									201709
	RAO									203209
	LTM									204709
HWAAP-018-R-07	RIFS									
	RAC									201709
	LTM									204709
HWAAP-020-R-08	RIFS									
	RD									201509
	RAC									201709
	RAO									203209
	LTM									204709
HWAAP-021-R-09	RIFS									
	RAC									201709
	LTM									204709

AEDB-R#	PHASE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+
HWAAP-022-R-10	SI									
	RIFS									
	RD									201509
	RAC									201709
	LTM									204709

Prior Years Funds
Total Funding up to FY04: $0K

Year	Site Information	Expenditures	FY Total
FY05		$0K	**$0K**

Total Funding up to FY05: $0K

Current Year Funds

Year	Site Information	Expenditures	FY Total
FY 06	SI - HWAAP-001-R-01	$ 88K	
	SI - HWAAP-006-R-01	$164K	
	SI - HWAAP-022-R-01	$145K	**$397K**

Total Funding FY06: $397K

Total Future Requirements: **$285,408**

Total MMR Program Cost: $**285,805K**

Community Involvement

In December 1995, to facilitate public involvement in the HWAD Installation Restoration Program, HWAD published public notices in the Mineral County Independent Newspaper for establishment of a Restoration Advisory Board (RAB). Only one inquiry to public notices was received. HWAD has regularly solicited community participation to establish a restoration advisory board (RAB). This has included; open house for the general public, statewide TV coverage of the HWAD IRP, public notices in the local newspapers, presentations to community clubs and high schools, and a public out reach through the local library or the web site at http://www.ndep.state.gov.

HWAD will continue to solicit community involvement. The Nevada Division of Environmental Protection is a full partner in the HWAD IRP and is supportive of our efforts to form a RAB for the Depot. They also recognize the difficulties of recruiting RAB members in a rural location such as Hawthorne.

Due to security concerns, all details in the Installation Action Plan (IAP) is no longer available for public review in the library. However, the public may call the Installation Restoration Program Manager at (775) 945-7317 at the Hawthorne Army Depot or NDEP for review of the IAP.

The community was surveyed in FY04 to determine interest in forming a RAB. There was no interest shown as a result of this survey. The community will be surveyed again in August 2006.